



Editorial Notes.

THE metric system of weights and measures has been discussed by the House of Commons, and a Bill for insuring its adoption in the United Kingdom has been read a second time. The further consideration of the Bill is deferred until after the publication of the report of the International Commission on Weights and Measures. We learn with pleasure that the adoption of the metric system has been recommended by the Liverpool Chemists' Association in a resolution carried unanimously at a recent meeting. A writer in the *Athenaeum* makes fun of the proposal to reform our weights and measures, and threatens to demolish the metric system at the proper time. He says, "as soon as we scent a metre, we shall mill a metre, hack at a metre, and kill a metre." These puns betray Professor DE MORGAN, the humorous mathematician, whose strange aversion to the metric system ought to be noticed in his own "Budget of Paradoxes."

We learn from the following letter, that Mr. WILLMOTT'S offer of a Prize for the best essay on "Dispensing," and the proposal of the Proprietors of this Journal to augment the Prize, have failed to elicit from the Chemists' Assistants' Association the expected papers:—

"CHEMISTS' ASSISTANTS' ASSOCIATION,
"14, AIR STREET, REGENT STREET, W.

"GENTLEMEN,—The Committee of the Chemists' Assistants' Association regret exceedingly to inform you that their offer of *Three Guineas* for the best Essay on 'Dispensing,' has met with no response on the part of the members. As the proposition was most warmly received, the result scarcely admits of a satisfactory explanation. The Committee, however, and the members also, are deeply sensible of your liberality, and trust you will accept their best thanks for your most kind offer. The conditions regarding the Essay were, perhaps, somewhat strict, but not more so, it is thought, than the occasion required.

"I am, Gentlemen, yours obediently,
"W. G. Clark, Hon. Sec.

To the Proprietors of the CHEMIST AND DRUGGIST,
May 15, 1868."

In place of the Prize essay on Dispensing, we print in another column an instructive paper on Medicine, read before the Association by the President.

At a recent meeting of the Medical Society of the State of New York, it was resolved,—That whereas the dental profession of the State of New York (now numbering about two thousand practitioners) are about to petition the Legislature of the State for such legal enactments as will tend to regulate the practice of dental surgery, and to mark some distinction between the meritorious and skilful and the ignorant pretender, and to give this profession a legal recognition, it is by this, the State Medical Society, resolved that this movement on the part of the dental profession of this State, to procure such general laws for their protection as now pertain to the medical profession, meets with our hearty approval, and that we hereby join in the prayer of these petitioners for this purpose.

It appears, on the authority of the *Spectator*, that Sir Robert Napier had an apparatus for employing the magnesium light on a grand scale in the event of a night attack. "At a distance of 600 yards a bewildering blaze of light would have been thrown into the eyes of the Assyrians; and the British, themselves in impenetrable shadow, would have shot down their lustrous enemies at leisure and at once."

Professor FRANKLAND'S report on the quality of the waters supplied by the metropolitan companies during last month is more satisfactory than usual, only one sample being particularised as not quite what it ought to be. "All the river waters," the Professor says, "have now attained their summer degree of purity, the active aquatic vegetation having withdrawn much of the mineral remains of the sewage poured into the Thames and Lea."

The appointment of a professor of homœopathy to the Faculty of Michigan has caused three of the professors to send in their resignations. It is supposed that all the other gentlemen attached to the school will follow their example.

THE AMENDED PHARMACY BILL AND THE PRESS.

THE Bill to regulate the sale of poisons, and alter and amend the Pharmacy Act of 1852, has been introduced to the House of Lords by Earl Granville, and read twice without a sign of opposition. The proposed legislation which we have so long advocated is, therefore, under the consideration of Parliament, and is happily associated with the name of one of our staunchest champions of education. We trust that the progress of the Bill through Parliament may not be interrupted by events affecting the regular course of public business, and that the hopes of those who have so steadily laboured to elevate the calling of chemists and druggists may be realised during the present session.

As yet, the Bill has attracted little attention, but two independent organs of opinion have already indicated the different lines of argument which will probably be adopted by its supporters and opponents. The *Express*, a newspaper which has never neglected an opportunity of extending the blessings of free trade, unhesitatingly accepts the principle of the Bill, and pronounces the opinions that we believe will prevail:—

"Poisons," says the *Express*, "are rightly excluded from the domain of free trade. In future, only properly qualified persons are to prepare pills, potions, and powders from certain dangerous drugs enumerated in the schedule of a Bill now before Parliament. After a time, no fresh follower of physis may style himself chemist and druggist, unless he shall have successfully passed an examination similar to the lower of those now voluntarily encountered by aspirants to the title of 'pharmaceutical chemist.' This is a wise regulation, for bad surgery is not more mischievous than bad pharmacy; the public is already fairly protected from the one, and is now offered protection from the other. The most virulent poison may be an excellent medicine when administered in minute quantities, and medicines harmless in appropriate doses may be poisonous if swallowed too freely. On such points, people generally are neither informed themselves, nor have any guarantee that complete knowledge is possessed by the druggist whose aid they seek.

"Among the indirect effects of the new legislation will be the rise, it is to be hoped, of a class of tradesmen who will be chemists in reality as well as in name. Chemistry is now

taught in most schools, and often forms the subject of amusement and instruction of the family, but boys usually seek in vain for chemicals, apparatus, or information of the neighbouring druggist. The trade in photographic chemicals seems also to have slipped away from him; indeed, in some cases we doubt if he knows how to test the purity of his own wares. So far as we can see, the proposed alteration and extension of the Pharmacy Act can only be productive of good."

The article we have quoted explains in a few words the objects of the proposed legislation. It reminds the public that "had pharmacy" is quite as mischievous as "bad surgery," and expresses the general belief that the contemplated alteration and extension of the Pharmacy Act can only be productive of good. But *audi alteram partem*. The *Medical Times and Gazette* regards the proposed Bill as a scheme for transforming a vulgar calling into a profession which may be mistaken for the medical profession. Our contemporary writes:—

"Lord Granville's Bill for restricting the trade of chemists and druggists, which will soon be under discussion in the House of Lords, is open to all the objections which we have on former occasions urged against proposals for limiting the trade to the members of the Pharmaceutical Society. Were it to become law, it is a restriction upon a trade which requires for its exercise no more special qualifications than do many other businesses and callings which necessitate the possession of a certain amount of education, and the acquirement of a certain kind of technical knowledge. It will erect the chemists and druggists into a profession, and indirectly foster and legalise counter practice; and it will inconvenience the public by diminishing the number of medicine vendors and dispensers, and confining them to the more populous towns, where a fair income will repay the cost of their expensive curriculum. If all this were necessary for the protection of the public, we would not for one moment object to it; but we do not believe it to be so. The major part of the dispensing of private surgeries and public dispensaries and hospitals is at present performed by apprentices and assistants without qualification. Mistakes are exceedingly rare, even under these circumstances; how much rarer are they likely to be when success in business depends wholly upon accuracy! There are many trades as dangerous as that of the chemist and druggist, against which the public have no protection. To erect the chemists into a special privileged class is a retrograde step in legislation, injurious to their own interests, and subversive of the acknowledged principles of commercial polity. We applaud the labours of the Pharmaceutical Society in improving the education and status of its members, but it surely is unnecessary to protect the best men by restrictions on the second-best."

We cannot accept the doctrine that the special qualifications required for the exercise of the trade of a chemist and druggist are so trivial that every man behind a dispensing counter may be supposed to possess them. We deny that the proposed legislation will indirectly foster and legalise "counter practice." We deny that the mistakes of unqualified dispensers are exceedingly rare. In fine, we regard the whole article as a deliberate misrepresentation of the relation of pharmacy to medicine.

The conclusion of the leader in the current number of the *Pharmaceutical Journal* is so good that we bring it before the chemists and druggists unconnected with the Society:—

"According to the Charter, the Society was formed 'for the purpose of advancing chemistry and pharmacy, and promoting a uniform system of education of those who should practise the same, and also for the protection of those who carry on the business

of chemists and druggists.' Now how could these objects be best carried out? The founders were men so well placed in the trade that they had nothing to gain, but might, on the contrary, be losers by the elevation of others. Nevertheless, they endeavoured to advance all; and if Jacob Bell could have carried his Bill in its entirety, none but pharmaceutical chemists would have been allowed to practise pharmacy. For that advantage, he would have thrown open the door, and admitted all chemists and druggists then in business to membership of the Society. For such an advantage, now, the Council are (wisely, we think) prepared to gather, as far as may be, all the present chemists and druggists into union—not to give them the title of 'pharmaceutical chemist,' which was, by Parliament, made the sole property of the then members of the Society and future examined men,—but to make them eligible for membership of the Society. And in this arrangement we think all rights are well cared for—those of the men who have hitherto stood aloof, for they are offered membership, and if disinclined to take it, may be left entirely unmolested; those of assistants and apprentices, for they may be placed on exactly the same footing as examined assistants under the Pharmacy Act; those of registered pharmaceutical chemists, for their title is rendered, if possible, more secure to them; and those also of the Pharmaceutical Society, for the enrolment of all chemists and druggists under its banner will enlarge its power of action, and enable it more surely to fulfil the duty for which it was established, namely, to advance chemistry and pharmacy, and with them the position of pharmacutists."

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

THIRTY-EIGHTH MEETING.

THE Hon. Local Secretaries of the British Association for the Advancement of Science have informed members, by circular, that the meeting for the present year will commence in Norwich on Wednesday, the 19th of August next, under the Presidency of JOSEPH DALTON HOOKER, Esq., F.R.S., D.C.L., etc., Curator of the Royal Gardens at Kew.

The fact that Norwich has never before been visited by the British Association, the character of its manufactures, the highly interesting geological features and archaeological remains in the surrounding district, with a hearty desire worthily to receive the Association, will combine, they trust, to make the meeting thoroughly interesting and successful. Norwich, from its short distance from London and the Universities of Oxford and Cambridge, is easily accessible to members desiring to be present. Through the liberality of various public bodies and private individuals, the Local Executive Committee have obtained excellent accommodation for the various meetings of the Association; a subscription has been raised to defray local expenses; the offers of private hospitality have been numerous; special invitations have been given to the corresponding members and a large number of distinguished foreigners; and every effort will be made to receive and heartily entertain visitors to the meeting.

The reception-room, at the Masonic Hall, Theatre-street, Norwich, will be open on Monday, August 17, at 12 o'clock, for the sale of tickets, and for supplying every information in our power to visitors.

The chief arrangements of the meeting are as follows:—

The opening address will be delivered in the Drill Hall, on Wednesday evening, the 19th of August, at 8 o'clock, by Joseph Hooker, Esq., F.R.S., D.C.L., etc., President Elect. Soirées will be held in St. Andrew's Hall on the evenings of Thursday, the 20th, and Tuesday, the 25th of August.

Evening lectures will be delivered in the Drill Hall on Friday, the 21st, and Monday, the 24th of August, at half-past 8 o'clock.

Various excursions (geological, archaeological, and ethnological) have been arranged to take place on Thursday, the

27th of August, to Cromer and its district, to Hunstanton, to Holkham, Castle Acre, Diss, Hoxne, Thetford, etc., full details of which, with times of trains, will be published in due course. Minor excursions, within a short distance of Norwich, are in course of arrangement, and will be notified at the time of meeting.

NOTES ON THE PHARMACEUTICAL CONVERSAZIONE.

THE Conversazione of the Pharmaceutical body was held at the Society's Rooms, in Bloomsbury-square, on the evening of May 19th, and was quite as successful as any previous re-union. We regard these annual *soirées* with much satisfaction, because we believe that they are calculated to promote in many ways the friendly relations which exist to so great an extent among the members of the trade; and if in these stray notes we indulge our critical vein, we hope our remarks will be received by pharmaceutical readers in the spirit in which they are written, and not ascribed to any feeling of opposition.

Perhaps, no public building in London is worse adapted for the purposes of a *conversazione* than the House of the Pharmaceutical Society. The rooms are excellently fitted for the purposes for which they were intended, and for this very reason they are eminently unfitted for a social gathering. Not only is the pleasing effect of a *coup d'œil* wanting by the whole exhibition being broken up into so many small pieces, but the arrangement of the various objects in different rooms causes an uncomfortable crowding where the most attractive displays are made, and leaves the visitor in a constant state of uncertainty as to whether he has seen everything worth seeing. The indefatigable secretary, however, and his assistants deserve the greatest credit for the numerous *dodges* to which they resort, in order to make the utmost of the awkward spaces at their command. We may, perhaps, venture to hope that in after years, when the great combination of the trade has been consummated—a result which we have now such good reason to anticipate—these united meetings may be held annually, in some large rooms well adapted for the display of interesting objects, where we may all assemble, and bring with us the ornaments of our homes and the delights of our hearts, to add the crowning grace to these pharmaceutical *conversazioni*.

We have no intention to offer our readers a catalogue of the many interesting and valuable products of scientific investigation, artistic labour, and technical industry which were exhibited on this occasion.

We strolled through the rooms, with our best eye constantly on the look-out for matters which, we thought, might be useful or interesting to the majority of our readers, and though we could not avoid indulging our other eye with an occasional glance at the scientific and artistic features of the show, we did not regard these as so worthy of notice in our pages as those objects specially connected with the business of a retail chemist and druggist.

Our business has many points of interest, and we believe it is capable of being cultivated so as to be rendered even more interesting and more profitable at the same time. We do not by any means recommend our readers to limit, in any degree, their oil and colour, pitch, tar, and verdigris connection; but we would certainly suggest that, in these days, when a scientific education is becoming more and more fashionable, the chemist's shop should be also a store where chemical apparatus might be purchased, or, at least, if this be not practicable, where the student might obtain such information as he might require. We want to see chemists in every town the pioneers of science—of chemistry particularly,—and recognised, not only as good business men, but

as men of good education and of cultivated minds. And for those reasons, we wish to see these *soirées* largely extended in their usefulness. We want our manufacturers to vie with each other to produce every year an exhibition, so that it would pay men to visit it from Liverpool or Newcastle, in order that they might meet with everything that was new and valuable connected with their trade.

But to leave these anticipations which were suggested by the meeting, and to pass to the description of the *Conversazione* of 1868 itself, we may remark that our business eye was attracted near the entrance by a brilliantly-lighted room, fitted up with a superb show of shop and window fittings, manufactured by Messrs. Treble and Son in the most finished and elaborate style. We are not qualified to describe in architectural terms the cornices, pilasters, and capitals, but we can say that the general effect of Messrs. Treble's design, worked out as it was in Spanish mahogany set off by black ebony, was very striking, and we must envy the good people of Belfast the constant treat in store for them, in the contemplation of this very handsome work in Messrs. Grattan and Co.'s establishment—for that, we were informed, was its destination. A sink for the dispensing counter, exhibited by the same firm, was also well worth the attention of those for whose use it has been designed. In this department, however, we think the remarks we have made above apply with especial force. We want to see an exhibition where Treble and Howlett, Tomlinson and Kidstone, Hester, Hawke, and Hay may all compete together for the blue riband of the trade, and where the troubled pharmacist may judge for himself from ocular demonstration which is the man most suitable for him to employ. Near this room, we observed two of Messrs. Burrow's soda water racks, partly filled with bottles, and we noticed with satisfaction that our judgment of the usefulness of these racks, lately recorded in the *CHEMIST AND DRUGGIST*, seemed to be unanimously confirmed.

Writing of soda water at once transfers our thoughts to the top of the building, where a cute but very courteous Yankee, Mr. Van Winkle, of the firm of Dows, Clark, and Van Winkle, was liberally dispensing to hot and thirsty chemists, his ice cream soda water beverage, which we hope to see them before long dispensing to their customers, as freely as, but somewhat more profitably than Mr. Van Winkle did that evening. For hours did he stand the siege by the side of his marble fountain, dealing out with nimble fingers the raspberry, lemon, and vanilla, or whatever was asked for, like a conjuror with his bottle. And when, at half past ten, the fountain was exhausted, we are bound to say that Mr. Winkle was not. Were our friends of the *Pharmaceutical Journal* annoyed to see their visitors leave the thallium compounds, and crowd around the syrup taps, or for what reason did they omit every acknowledgment of this enterprising American firm's liberality? *Tantæne animis celestibus viæ?* Speaking seriously, however, we should hail it as a great social reform, if ice cream soda water could elbow out of our land a few of the hogsheads of rum, gin, and brandy, which now constitute so large a share of the Briton's refreshment.

Descending the stairs again, we came upon Professor Bentley's collection of living plants, including specimens of tea, coffee, cocoa, sugar, pepper, and others more directly connected with our business. Perhaps, no science excites so much enthusiasm and, at the same time, so much aversion as botany; and these different states of feeling were plainly observable on the faces of the passers by that evening. Mr. Rimmell, whose spirit generally haunts such gatherings as these, showed one of his perfume fountains, and left us to infer how much it would add to the luxury and attrac-

tiveness of a chemist's shop if one of these were placed in its centre through the hot and dusty summer. Messrs. Burgoyne, Burhidge, and Squire provided a great treat by the exhibition of a number of Geissler's vacuum tubes, of most brilliant colours and beautiful designs, and these attracted considerable attention. There were several other exhibitors of novel electrical apparatus, among which we ought to mention Dr. Warren de la Rue's chloride of silver battery. Mr. How, the scientific instrument maker, of Foster-lane, occupied the theatre, and with the aid of the oxyhydrogen light, showed upon a screen an interesting series of microphotographs, some of which were remarkably beautiful. Mr. How also sent a collection of chemical apparatus, and, with the London Stereoscopic Company, Messrs. Murray and Heath, Ross, Beck, Ladd, Horne and Thornthwaite, Collins, and many others, added much to the enjoyment of the evening by contributing a great number of microscopes and stereoscopes. Among the exhibitors of chemicals, we may remark that Messrs. Morson and Son maintained their high reputation by means of several specimens of beautiful and rare crystals. Messrs. Hopkin and Williams, Mr. Crookes, F.R.S., and lastly, though, perhaps, chiefly, the Master of the Mint, all came forward with matters of rare chemical interest. This last gentleman showed the very striking and wonderful properties possessed by the metal palladium of secreting in its pores more than 400 times its bulk of hydrogen gas.

Besides these attractions of purely scientific or commercial interest, the rooms were liberally adorned with works of art, photographs, paintings, busts, and many curiosities which scarcely fall within our province of reporting. We may, however, conclude this notice of the *Conversazione* by referring to the proofs of the portrait of the late Mr. Jacob Bell, drawn by Sir Edwin Landseer, and engraved by his brother, Mr. Thomas Landseer. This portrait has been executed at the expense of Mr. Hills, and we understand it will shortly be published. The profits, or rather, we should say, the proceeds, of the sale of these prints are to be devoted to the formation of a fund for presenting prizes of books to those young men who pass their minor examinations with most credit. Certainly, this is a most appropriate way of honouring the memory of that excellent man, and we believe there are hundreds of our readers who will be glad to have the opportunity of obtaining so valuable a memorial of one who through all his life took such an unselfish interest in their welfare and advancement. Mr. Hills proposes to have published 100 artists' proofs before letters at 3 guineas each, 150 artists' proofs after letters at 2 guineas, 300 proofs at 1 guinea, and 500 at 10s. 6d.; and by this means, he expects to raise a fund of between £500 and £1,000. With such an artist and such an engraver, we need not say that, both as a portrait and a work of art, the execution of these pictures will be all that can be desired.

MR. SANDFORD ON THE UNIFORM PRACTICE OF DISPENSING CHEMISTS.

THE President of the Pharmaceutical Society in his recent address to the members, indicated the course of action that should be adopted by dispensing chemists to insure consistency in the practice of pharmacy.

"It has ever been the rule of our Society," said Mr. Sandford, "scrupulously to abstain from interference with matters which might be, or even seem to be, questions best left for the judgment of each member in his own private trade; but circumstances sometime arise in which it is of great importance that the practice of all should be alike, and an effort to promote that uniformity of action, conducive alike to our private interest and our reputation as a class,

cannot, I think, be deemed an intrusion. It is of the utmost importance that the public should find no difference in the medicines supplied to them by different dispensers; and, unless all work by one rule, the chances are very great that they will do so. Now the issue of a new Pharmacopœia must necessarily create a difficulty, and you may perhaps remember that when I had the honour of presiding here at our last annual meeting, I spoke of the uncertainty we had all felt during the three years in which the first British Pharmacopœia had been, or ought to have been, our text-book. Its successor had just been sent forth by the Medical Council, and within a month afterwards an official notification appeared that that, and that only, was to be the future guide for dispensers. The Vice-president concurred with me in thinking it to be our duty to bring this announcement immediately under the notice of every member of our Society. There were various reasons for our doing so: our duty to the highest medical authority in the kingdom; our feeling that the utmost confidence should exist between prescribers and dispensers, as well as between customers and their chemists; and lastly, but certainly not least, our strong sense of the annoyance and positive damage which must result to pharmacutists, individually and collectively, if the new preparations were used in one establishment and the old in another. There are cases in which a deviation from the authorised forms might be of serious moment; indeed, we have lately seen one severely commented on, in which solution of morphia, P. L., was used where the P. B. solution was intended. There are other preparations varied in flavour and appearance, and although their medicinal effect may not be materially altered, mixtures compounded with their predecessors of the old Pharmacopœia would cause doubt and distrust on the part of patients, who may from necessity or choice go from shop to shop with the same prescription. Gentlemen, I think I but utter the sentiments of the founders and upholders of the Pharmaceutical Society when I say, that it is more pleasant to hear our customers express confidence in Pharmaceutical Chemists generally, than to be told by them that they prefer bringing their prescriptions to us, because the mixtures they get elsewhere are different to our own. There is room for us all, and let each man live in his own neighbourhood or connection.

"That there are difficulties in the way of the universal adoption of the new Pharmacopœia—in some cases, insurmountable difficulties—must be allowed by all; therefore, when we advised the practice of adhering to it as our only legal guide, unless an indication to the contrary appeared in the prescription, we by no means desired that blind compliance which would put the exercise of a constant discretion on the part of dispensers out of use. That discretion is one of the great safeguards of the public, and indications may exist which are not positively written. We are not mere machines. Nor, on the other hand, did we desire in the slightest degree to dictate to prescribers; it is as much our duty to follow their instructions and carry out their wishes in individual cases, as it is to follow the Pharmacopœia generally. There can be no difficulty in dispensing medicines from the old forms when so ordered. We daily use preparations which have no place either in the London or British Pharmacopœia; our only aim should be to do exactly that which the doctor thinks best for his patient, and to that end the most perfect confidence between medical practitioners and dispensing chemists is essential. If chemists, on their part, declare the new Pharmacopœia as their standing guide, prescribers will soon acknowledge the necessity for explicit instructions when they desire a departure therefrom, and I think think they will rather thank us for so clear an understanding."

NOTES ON THE CULTURE AND COMMERCE OF OPIUM IN ASIA MINOR.

BY E. R. HEFFTER, SMYRNA.

THE difficulties that surround agriculturists in this country are great and numerous, arising principally from the scarcity of labourers, and the want of capital, roads, etc., and were it not for the advantage of a fine soil and climate very little cultivation indeed could exist. The

agricultural implements are of the most primitive description, as may be inferred from the fact that the plough does not go deeper into the soil than about four inches; but the climate and soil are so favourable to vegetable growth that all the crops are produced without irrigation. In the case, however, of the opium grower, there are other difficulties, entirely beyond his control, dependent on the very sensitive nature of the poppy plant, and particularly precarious condition of the crop when about being collected.

The poppy is generally sown at three different times in one season. For instance, the grower who intends sowing three acres of land will sow one at a time, the first acre about the middle of November or so, after the first winter rains; the second acre in December, and the third between February and March. The first sowing is called *Güzmalı*, the second *Kışmalı*, and the third *Yazmalı*. There are two good reasons for this practice; first, by this arrangement the chance of a total failure of the crops is obviated, and secondly, as it makes a difference of about a fortnight between the times when the first and last sowings arrive at maturity, it economises labourers; in fact there would not be sufficient hands to gather half the quantity, if this system were not in a great measure pursued; as it is, when the crops succeed well, fully one fourth of them is lost for want of hands.

A moist soil is indispensable for the successful cultivation of the plant, too much moisture, on the other hand, is injurious; it therefore follows that with a wet winter the poppy grows best on hilly grounds, and with a dry winter in low plains.

Owing to the difference of climate between the upper and lower country, in the former district the first crops are gathered in July, and in the latter in May. If rain falls when the plant is maturing the yield of opium is greatly augmented.

The calyx of the poppy, better known as the poppy-head, is that part of the plant from which the opium is extracted. It is considered to have arrived at maturity when it has changed to lighter green hue, and the extraction of the opium is then effected in the following manner:—

An incision is made with a knife half round the poppy-head, horizontally, and sometimes a second incision is made in a vertical direction. This operation is generally performed in the afternoon, and next morning the milk, or juice, that during the night has oozed from it, is collected by the gatherer, who scrapes it from the head with his knife, transferring it from the latter to a leaf of the poppy he holds in his left hand. At every alternate scraping the knife is wetted with saliva, by drawing it through the mouth, in order to prevent the juice adhering to the instrument.

Great care is required in making the incision. Should it be too deep, and the interior coating containing the seed be also cut, the opium would be lost, as the juice would then run into the poppy-head; and again, if the incision should not be deep enough, all the juice would not ooze out.

The objectionable practice of using saliva, which is not always limited to the wetting of the knife, has often been unadverted upon,* but as the use of water would involve more labour the gatherers pretend that, unless saliva were used, the opium would ferment.

As soon as a sufficient quantity of the juice, or opium, is collected to form a ball, it is wrapped in poppy leaves, and put to dry in the shade for a short time only. There is no given size for cakes of opium, and they vary very much in weight, from a few ounces to two or more pounds; but in some villages they are made, on an average, larger than in others.

Short as is the interval between making the incision and collecting the opium, it is still a most precarious one, for a shower (by no means an unusual thing at that time of the year), a heavy dew, or a strong wind would suffice to destroy the crop of all those fields that had been prepared for collecting on the previous day.

As a rule, every poppy-head is only cut once, but as each plant produces several heads which do not arrive at maturity simultaneously, the operation of the incision and gathering of the juice is generally gone over twice, or thrice, in the same field, when the opportunity is taken of recutting such heads as exceed the usual size.

One of the peculiarities of the poppy is that its yield does

not entirely depend upon its condition, the amount of dew falling the night after the incision is made having the greatest influence on both quantity and quality. The heavier it is, as long as it is not so heavy as to wash away the milk, the greater the yield, but in proportion to this increase is also the weakness, or inferiority of the product; this accounts for the greater proportion of inferior opium usually found in large crops.

The opium grower is generally a small land proprietor, who cultivates as much as his own family circle can attend to, nor would it be possible for large land owners to grow this article on a large scale, owing to the want of hands; but supposing even that labourers could be obtained, such would be the necessary expenditure for the same that it is very questionable whether the cultivation would be remunerative.

From the grower the opium passes into the hands of the merchants of the interior, who, after collecting it together, pack it in grey calico bags, which they seal and place in a wicker basket of oblong shape, a very light weed being strewn between the cakes, to prevent them from sticking together, and in this condition it is brought down to Smyrna. And here it must be mentioned that, while Smyrna is the market proper for all the opium grown in Asia Minor, nevertheless a very small quantity does find its way to the Constantinople market direct. The opium remains in the baskets undisturbed till sold, and it is only on reaching the buyer's warehouse that the seals are broken, and that the cakes are for the first time exposed. This takes place before buyer, seller, and public examiner, and the latter then goes through the process of examining it piece by piece, and should either buyer or seller entertain a different opinion to his own respecting any of the pieces, they are put aside and carefully reexamined at the end.

There are three qualities of opium, viz., the prime,* the current, and the inferior opium, or *chikintee*; a fourth quality might be said to exist, if we take into account the adulterated cakes, which are either entirely false, or a mixture of opium, with sand, gums, eggs, etc., in fact anything considered least liable to detection. The prime consists either of picked samples from different baskets, or what is more generally the case, of the opium grown in certain districts. The current is the mercantile, or bulk of the crop, and the *chikintee* is that rejected from both the prime and current qualities. Quality, however, is generally supposed to be indicated by the name of the place where the opium has been grown, but admitting that some places, on the whole, produce superior opium to others, the particular quality of a purchase cannot be inferred from the name of the district whence it was derived. Besides, if place is a trustworthy indication as to quality, the question arises how is the opium of one place to be distinguished from that of another. The sales effected at the end of the season, which are supposed to refer to opium coming from the renowned districts often amount to three and four times the quantity those districts can possibly produce; this anomaly is only a proof as to the capacity of other places of producing a quality equal to that of more famous districts.

Commercially speaking, there is no rule by which one can become a judge of opium of however moderate aspirations; this ability can only be acquired by many years practice. In examining this article, the use of nearly all the faculties is required: colour, appearance, weight, scent, etc., are important indications, and yet a dark coloured cake is often as good as a light one, or both may be bad; and differences of scent, consistency, etc., are equally misleading when considered alone. In valuing opium, therefore, one must be guided by a combination of circumstances, so variable in themselves that, as before mentioned, the knowledge required by the opium merchant can only be acquired by great experience. Such being the case, it may easily be imagined what people here think of the system pursued in some markets, where opium is mostly judged by its external appearance.

The first baskets of opium arrive in Smyrna about the end of May, or beginning of June; but for several reasons, it is

* Known in this market under the name of *Yerly*, which word means "of this place," viz. that grown round about Smyrna, implying thereby that only this, and the whole of it, is prime; so far from this being correct, there are in the vicinity of Smyrna some places producing very bad opium, while in some of the farthest districts the quality is first rate.

not safe to effect any shipments before the month of August. In the first place, too fresh opium is liable to get heated; secondly, the ehikintee is not so easily detected; and thirdly, it gives a loss in weight.

Apart from agricultural causes, the crop of opium, like that of other productions, depends, in a great measure, on the ruling prices at the close of the season, which influence its greater or lesser sowing, so that after a large crop with low prices, a small crop, and, of course, high prices, are almost sure to follow, and *vice versa*. As a guide to the probable ruling prices of a season, the extent of the crop is, of course, a very good criterion; to ascertain this, however, with any degree of accuracy, the greatest difficulty is encountered. First of all, the merchants' stock holders, who know well the influence of quantity on price, are always ready to mislead one, and, secondly, no account can be obtained from the Government tax gatherer, as the titnos are usually sold by auction; consequently it is only by dint of great exertions and experience that anything like the truth can be ascertained.

The best time for effecting purchases, as a rule, is at the commencement of a season; with a small crop, however, the chances are often most in favour to the buyer at the end of a season, for, according to the remark that after a small crop comes a large one, prices are generally affected towards the close by the coming crop.

From a record published by the writer some months ago, respecting the crops and shipments of opium for the last ten years, viz., from July 1857, to June 1867, the following principal items may be deduced:—

AVERAGE CROPS.

1857-58	3,026 cases.	Average price,	16-28*
1859-60	3,013	"	18-58
1860-61	3,381	"	17-29
1863-64	2,866	"	17-88

3,000 cases at 17s. 6d. being the average quantity and price for the above four years.

SHORT CROPS.

1858-59	1,439 cases.	Average price,	19-76
1862-63	2,236	"	18-01
1866-67	2,246	"	16-92

2,000 cases at 18s. being the average quantity and price for the above three years.

LARGE CROPS.

1861-62	4,180 cases.	Average price,	14-39
1864-65	3,893	"	15-20
1865-66	4,135	"	13-83

4,000 cases at 14s. 6d. being the average quantity and price for the above three years.

The total for the ten years is 30,415 cases, or an average of 3,000 cases per year at 16-39, say 16s. 4½d.

The months of June represent the smallest shipments, viz., 1,326 cases, or an average of 132 cases per month.

The months of October the largest, viz., 4,979 cases, or an average of 497 cases per month.

Before the date at which the writer's record begins, a fair crop consisted of only 2,000 baskets, and the average price was about 11s. 6d. The established progress of this article in so short a time is without parallel, the crops having nearly doubled themselves, and prices risen to fully fifty per cent. It would have been natural to suppose that, with such an increased production, prices would have lowered in proportion, which, no doubt, would have been the case, if demand had not also kept pace. This, to-day, cannot be properly satisfied under a supply of say 3,500 baskets, beyond which only prices give way. It must not, however, be supposed that they can possibly go lower than the average of a full crop, for then it would not pay the agriculturist to cultivate this article, and would cause him to turn his attention to other and more profitable products; this would naturally have the effect of diminishing considerably the ensuing crop, and raising its price. It is only in the districts farthest from Smyrna that the grower is obliged, as it were, to cling to opium, for the expense of transit prevents the exportation of all other articles which, remaining for local consumption, command only a low price. But as opium alone, on account of its small bulk in comparison to value, can bear the forwarding charges, it is almost,

under any circumstances, the best paying article for the said districts.

The fact must not be overlooked that the demand is still slowly, but steadily increasing, and that, on the other hand, the productive capacities of the opium districts are at their climax. When, therefore, prices are under or about those of a corresponding crop out of the last ten years, the opportunity of buying should not be missed.

With reference to the average price of some twelve to fifteen years ago, it must be observed that the necessities of life were at that time so much cheaper, that the then 11s. 6d. was, perhaps, more remunerative than the 16s. 6d. of the last ten years.

Report

ON THE CONDITION AND PRACTICES

OF THE

VARIOUS CLASSES CONNECTED WITH

The Drug Trade.

IV.—THE BLACK SHEEP OF THE FLOCK.

IN the numbers of the CHEMIST AND DRUGGIST for January, February, and March of the present year we did our best to expose the tricks and wiles practised on an ignorant and long-suffering public, by those whom the sporting prophet Nicholas would designate, very justly, "as rank outsiders;" on the present occasion we intend dealing with a class of persons who are even worse than these—a set of traitors, who have not only passed our pickets, but have even intruded themselves as far as the door of the general's tent. To drop metaphor, our intention is to administer a severe, but just chastigation, both to the ignorant trader that half poisons the poor of Whitechapel with pills at a penny a dozen, and to the fashionable pretender to scientific knowledge who turns over his thousands per annum in a magnificently decorated shop at the West End.

Perhaps at this stage of our journey some over kind and well intentioned readers will be inclined to quarrel with us for exposing the faults and foibles of our own fellows, but to these good-natured persons we simply reply, that as our journal is, as a rule, only seen by the profession, our foul linen is washed in our own family, and that even if a few members of the general public happen to read our strictures they will only gain sufficient knowledge whereby to distinguish for the future between those practitioners who are an honour to their calling, and those who are a disgrace to it. Humbug and trickery are precisely as old as human fallibility and greed. In all ages we have had hypocrites who passed for saints, cowards who made the world believe that they were heroes, and blockheads who pretended to be philosophers; what wonder then if we find amongst our own ranks a number of tricksters who do not disdain to find their account rather in deluding a gullible public than in steady hard work and thorough uprightness.

The better kind of scientific pretender is somewhat difficult to treat of in the present state of the law of libel. His love of publicity is so great, and his nostrums are consequently so well known both to the profession and the public, that the mere mention of one of them would unquestionably lead to several very expensive interviews with our solicitor. Suffice it to say that he misuses Greek and Latin terminology in a very clever manner, and bestows the termination "ine" or "yne" on hair dye, liquid glue, and a number of other compounds that are about as definite in composition as a cup of tea. In some instances he even goes so far as to give a pretended analysis of his wares, drawn up in true scientific style, the particular compounds of course bearing a high sounding Greek or Latin name. In other cases he puffs the syrup of a salt, said to contain three different bases in combination with an acid, the said salt being also about as determinate in its constitution as the pleasant beverage we have just mentioned. If he is lucky enough to get on the blind side of a fashionable medical practitioner, a flaming testimonial soon makes it appearance, stating, on the authority of Epaminondas Smith, Esq., M.D., F.R.S.;

* Those prices are calculated in shillings, and hundredths of shillings, per English lb. free on board.

F.R.C.S., etc. etc., that Messrs. Brown and Jones's elegant preparation "Grueine" is the real, pure, and only way of exhibiting—a good high-sounding word "exhibiting"—the familiar groat to the most delicate invalid, the method of manufacture being such as to render the disgusting application of axungeal compounds to the nose, in cases of cerebral catarrh quite unnecessary. The West-end huckster generally manages by hook or by crook to worm himself into the ranks of a certain honourable and learned society, that numbers amongst its members some of the first pharmacists in Europe. If, in addition to this, he can contrive, through friends at court, to sink into the Chemical Society, and add F.C.S. to his name, his triumph is complete, and he takes a country house, and orders a brougham on the strength of it.

In dealing with these cases we are in great fear of being misunderstood, for we would not have it supposed for a single moment that we have the slightest objection to a large and wide system of advertising pharmaceutical preparations or appliances; indeed seeing the considerable amount of patronage we enjoy in this direction, it would be inconsistent and unnatural for us to do so, but what we do object to most strongly are the adventitious aids to puffery drawn from scientific nomenclature, and from the foolish good nature of certain medical men of good standing. The members of the learned profession to which pharmacy is content to act as the bandmaid, frequently find great fault with us for over advertising our productions; but before throwing stones at us they ought, in all honesty, to read the numerous testimonials given by physicians of good name to preparations that are more or less worthless, and ask themselves whether these helps to puffing are not more frequently quite as much an advertisement of the writer as of the article he undertakes to eulogise. The chemist and druggist of the present day is surrounded by so many energetic competitors that he may be said to be dependent on judicious advertising for his daily bread; and this brings us to the second kind of disgrace to the profession—the puffing, underselling trader of the poorer districts.

These gentry and their shops are nearly all alike in their outward characteristics, so that the description of one will do for all. What with counter work, dispensing, and reading, the chemist and druggist has but little time to look after the doings of his neighbours; and it is only by the remarks of his customers that he becomes aware of the advent of one of these gentry to his neighbourhood. He is generally an illiterate, but energetic man, who has perhaps acted as porter or clerk in a large retail or wholesale house, and has managed to learn at least the names of the common drugs and chemicals that he sells. His shop, of course, contains but few of those artistic embellishments that are now so common in all decent establishments, the decorations of his window being principally in the way of trusses and tooth brushes. His *pièces de resistance*, in the way of medicaments, are generally infallible pills of some sort, cough mixture, and a valuable specific for the cure of certain diseases in three days. The digestive pills are mostly *pil. cochiae*, the cough mixture syrup of squills, and the valuable specific the ordinary *capiui* mixture, which he administers indiscriminately for the major and minor disorder. The fittings of his shop are of the meanest description, and the surgery often reeks with tobacco smoke. There is of course the inevitable boy capping bottles of bear's grease, in the corner, who, on closer examination, proves to be lineal descendant of the young gentleman in the "Pickwick Papers," who always served oxalic acid for Epsom salts, and *linct. opii* for black draught. His employment consists principally in fetching his master from "round the corner," when an important customer comes in. The chief game of these parasites is to endeavour to undermine the legitimate trader, by underselling him in a shameless manner. There is one of the fraternity whom we have in our eye and who keeps a dirty little shop in a back street in a locality that we shall call the North Central district, who is a fair type of his class. Over his door is a conspicuous placard, informing the public that prescriptions are correctly dispensed, and medicines sold at less than half the price charged by any other establishment in the neighbourhood. We have one of this man's handbills before us, by which it appears that he supplies a $\frac{1}{2}$ lb. of Epsom salts for the low charge of 1½d., one dozen *pil. cochiae* for 1d., a black

draught and blue pill for 4d., and so on, in proportion. One of the items in the list is a notification that patent medicines usually charged at 1s. 1½d. are supplied for 1s. Now this system of selling patent medicines below their proper price is one which ought to be stopped at once by the proprietors of these medicaments, in common fairness to the legitimate trader, who has to battle against this sort of people; and we invite our readers to send us notice of any such irregularity for transmission, in confidence, to the proper quarters. The worst feature in this wretched effusion is the impudent and unwarrantable misuse of the names of two highly respectable medical men in conjunction with a couple of nostrums of doubtful efficacy. One of these is coolly described, in large capitals, as DR. BLANK'S TIC DOLOREUX (*sic*) MIXTURE, at 8d. a bottle; the other, as DR. DASH'S COUGH MIXTURE, at 6d. a bottle. Dr. Blank being a celebrated West End physician, famous for his successful treatment of neuralgic cases; while Dr. Dash is a general practitioner of great fame, residing in the immediate neighbourhood. It is, of course, hardly necessary to say that the gentlemen above mentioned know nothing whatever, either of the man, or of his nasty mixtures.

The advocates of free trade in pharmacy—we believe there are a few left—will, no doubt, cry out on us for wishing to rob the poor man of his physic; but to this accusation we beg to demur. We have no wish—God forbid that we should—to see medicines sold at such a price as to be beyond the reach of the poor; all we desire is, that prices should be kept up to their lawful standard. The poor man has little to fear from high prices, seeing the number of dispensaries that are now open; besides the amount of medicine given away annually by every member of the profession is simply incalculable. A few days since, an esteemed friend of ours showed us his dentistry register, from which it appeared that he had operated upon over 2,000 cases gratuitously during the past year. These figures, of course, do not represent the actual number of teeth drawn, which might he fairly set down at 4,000; or, in other words, this gentleman has bestowed £200 on the poor of his parish in one year. From this we may fairly judge of the amount of medicine bestowed on the really poor man. As for the general public they have as a rule sufficient sense to prefer high prices, knowing that they are in some measure a guarantee that pure drugs are dispensed to them. An instance of this came across our notice only a few days since, in which an old lady was vastly indignant at being charged only 1s. 6d. for a prescription, instead of 2s. 6d., the price she had always been used to. She very naturally suspected that the cheaper mixture was in some degree inferior to the dearer, and, consequently, perhaps acted judiciously in emptying it out of the window. But the whole question of high prices is a large and important one, and must not be discussed at the fag end of an article on the "Black Sheep of the Flock."

A BILL

TO REGULATE THE SALE OF POISONS AND ALTER AND AMEND THE PHARMACY ACT, 1852.*

WHEREAS it is expedient for the safety of the public that persons keeping open shop for the retailing, dispensing, or compounding of poisons, and persons known as Chemists and Druggists, should possess a competent practical knowledge of their business, and to that end, that from and after the day herein named all persons not already engaged in such business should, before commencing such business, be duly examined as to their practical knowledge, and that a register should be kept as herein provided, and also that the Act passed in the 15th and 16th years of the reign of her present Majesty, intituled An Act for Regulating the Qualification of Pharmaceutical Chemists, 15 & 16 Vict. hereinafter described as the Pharmacy Act, should be amended; be it enacted, by the Queen's Most Excellent Majesty, by and with the advice and consent of

* As introduced to the House of Lords by Earl Granville, and read for the first time on May 19, and for the second time on May 23.

the Lords Spiritual and Temporal and Commons in this present Parliament assembled, and by authority of the same, as follows:

Persons selling or compounding Poisons, or assuming the title of Chemist and Druggist, to be qualified.

1. From and after the 31st day of December, 1868, it shall be unlawful for any person to keep open shop for retailing, dispensing, or compounding poisons, or to assume or use the title "Chemist and Druggist" or Chemist or Druggist in any part of Great Britain unless such person shall be a Pharmaceutical Chemist, or a Chemist and Druggist within the meaning of this Act.

Poisons within the meaning of Act.

2. The several articles named or described in the Schedule A shall be deemed to be Poisons within the meaning of this Act, and the Council of the Pharmaceutical Society of Great Britain (hereinafter referred to as the Pharmaceutical Society) may, from time to time, by resolution, declare that any article in such resolution named ought to be deemed a poison within the meaning of this Act, and thereupon the Registrar hereinafter named shall submit such resolution to the Medical Council, and if the Medical Council shall resolve that such resolution ought to be confirmed, the said Registrar shall then submit the same for approval of one of her Majesty's Principal Secretaries of State, and if such approval shall be given, then such resolution, confirmation, and approval shall be advertised in the "London Gazette," and on the expiration of one month from such advertisement, the article named in such resolution shall be deemed to be a poison within the meaning of this Act.

Chemists and Druggists within the meaning of Act.

3. Chemists and Druggists within the meaning of this Act shall consist of all persons who, at any time heretofore, have carried on, in Great Britain, the business of a Chemist and Druggist, in the keeping of open shop for the compounding of the prescriptions of duly qualified medical practitioners, also of all Assistants and Associates duly registered under or according to the provisions of the Pharmacy Act, and also of all such persons as may be duly registered under this Act.

Apprentices and Assistants to be registered.

4. Any person who, for two years prior to the time of passing this Act, shall have been apprenticed to, or who, at the time of the passing of this Act, shall be of full age and shall have been actually engaged and employed in dispensing and compounding prescriptions, as assistant to any Pharmaceutical Chemist, or any such Chemist and Druggist as defined by Clause 3 hereof, may, on transmitting to the Registrar, before the 31st day of December, 1870, certificates, according to the Schedule E to this Act, be registered under this Act.

Chemists and Druggists in business may be registered.

5. Such of the Chemists and Druggists, defined by Clause 3, as may, on or before the 31st day of December, 1870, by notice in writing, signed by them, and given to the Registrar, request to be registered under this Act, shall, on production of certificates according to the Schedules C and D to this Act, be registered accordingly.

Examiners under Pharmacy Act to be the Examiners under this Act.—Certificate of competent skill, &c.

6. All such persons as shall from time to time have been appointed to conduct examinations under the Pharmacy Act, shall be, and are hereby declared to be examiners for the purposes of this Act, and are hereby empowered and required to examine all such persons as shall tender themselves for examination under the provisions of this Act, and every person who shall have been examined by such examiners, and shall have obtained from them a certificate of competent skill and knowledge and qualification, shall be entitled to be registered as a Chemist and Druggist under this Act, and the examination aforesaid shall be such as is provided under the Pharmacy Act for the purposes of a qualification to be registered as Assistant under that Act, or as the same may be varied from time to time by any Bye-law to be made in accordance with the Pharmacy Act, with the approbation of one of her Majesty's Principal Secretaries of State.

7. Such fees shall be payable upon every such Application of fees to purpose of examination and registration as aforesaid, as shall from time to time be fixed and determined by any Bye-law, to be made in accordance with the Pharmacy Act, with the approbation of one of her Majesty's principal Secretaries of State, and shall be paid to the Treasurer of the said Society, for the purposes of the said Society.

Registrar under Pharmacy Act to be Registrar under this Act.

8. The registrar appointed, or to be appointed, under or by virtue of the Pharmacy Act, shall be registrar for the purposes of this Act.

Council of Pharmaceutical Society to make orders for regulating register to be kept.

9. The Council of the Pharmaceutical Society shall, with all convenient speed, after the passing of this Act, and from time to time, as occasion may require, make orders or regulations for regulating the register, to be kept under this Act as nearly as conveniently may be in accordance with the form set forth in the Schedule B to this Act, or to the like effect, and such register shall be called the Register of Chemists and Druggists.

Duty of Registrar to make and keep Register.

10. It shall be the duty of the Registrar to make and keep a correct register, in accordance with the provisions of this Act, of all persons who shall be entitled to be registered under this Act, and to erase the names of all registered persons who shall have died, and from time to time to make the necessary alterations in the addresses of the persons registered under this Act, to enable the Registrar duly to fulfil the duties imposed upon him, it shall be lawful for the Registrar to write a letter to any registered person, addressed to him according to his address on the register, to inquire whether he has ceased to carry on business or has changed his residence, such letter to be forwarded by post as a registered letter, according to the Post-Office regulations for the time being, and if no answer shall be returned to such letter within the period of six months from the sending of the letter, a second, of similar purport, shall be sent in like manner, and if no answer be given thereto within three months from the date thereof, it shall be lawful to erase the name of such person from the register, provided always that the same may be restored by direction of the Council of the Pharmaceutical Society, should they think fit to make an order to that effect.

Notice of death of Pharmaceutical Chemist or Druggist to be given by Registrars.

11. Every Registrar of Deaths in Great Britain, on receiving notice of the death of any Pharmaceutical Chemist, or Chemist and Druggist, shall forthwith transmit, by post, to the Registrar under the Pharmacy Act, a certificate, under his own hand, of such death, with the particulars of the time and death, and on the receipt of such certificate, the said Registrar under the Pharmacy Act shall erase the name of such deceased Pharmaceutical Chemist, or Chemist and Druggist, from the register, and shall transmit to the said Registrar of Deaths the cost of such certificate and transmission, and may charge the cost thereof as an expense of his office.

Evidence of qualification to be given before registration.

12. No name shall be entered in the register, unless the Registrar be satisfied by the proper evidence, that the person claiming is entitled to be registered; and any appeal from the decision of the Registrar may be decided by the Council of the Pharmaceutical Society; and any entry which shall be proved to the satisfaction of such Council to have been fraudulently or incorrectly made, may be erased from or amended in the Register, by order, in writing, of such Council.

Annual Register to be published and be evidence.

13. The Registrar shall, in every year, cause to be printed, published, and sold, a correct register of the names of all Pharmaceutical Chemists, and a correct register of all persons registered as Chemists and Druggists, and in such registers, respectively, the names shall be in alphabetical order, according to the surnames, with the respective residences, in the form set forth in Schedule B to this Act, or to the like effect, of all persons appearing on the Register of Pharmaceutical Chemists, and on the Register of Chemists and Drug-

gists, on the 31st day of December last preceding, and such printed registers shall be called "The Registers of Pharmaceutical Chemists and Chemists and Druggists," and a printed copy of such registers for the time being, purporting to be so printed and published as aforesaid, or any certificate under the hand of the said Registrar, and countersigned by the President or two Members of the Council of the Pharmaceutical Society, shall be evidence in all Courts, and before all Justices of the Peace and others, that the persons therein specified are registered according to the provisions of the Pharmacy Act or of this Act, as the case may be, and the absence of the name of any person from such printed register shall be evidence, until the contrary shall be made to appear, that such person is not registered according to the provisions of the Pharmacy Act or of this Act.

Penalty on wilful falsification of Register, or for obtaining registration by false representation.

14. Any Registrar who shall wilfully make, or cause to be made, any falsification in any matter relating to the said registers, and any person who shall wilfully procure or attempt to procure himself to be registered under the Pharmacy Act, or under this Act, by making or producing or causing to be made or produced any false or fraudulent representation or declaration, either verbally or in writing, and any person aiding or assisting him therein, shall be deemed guilty of a misdemeanour in England, and in Scotland of a crime or offence punishable by fine or imprisonment, and shall on conviction thereof be sentenced to be imprisoned for any term not exceeding twelve months.

Protection of titles and restrictions on sale of poisons.

15. From and after the 31st day of December, 1868, any person keeping an open shop for the retailing, dispensing, or compounding poisons, or who shall take, use, or exhibit the name or title of Chemist and Druggist or Chemist or Druggist, not being a duly qualified Pharmaceutical Chemist or a Chemist and Druggist, or who shall take, use, or exhibit, the name or title Pharmaceutical Chemist or Pharmacist, not being a Pharmaceutical Chemist, shall, for every such offence, be liable to pay a penalty or sum of £5, and the same may be sued for, recovered, and dealt with in the manner provided by the Pharmacy Act for the recovery of penalties under that Act.

Reserving rights of certain persons.

16. Nothing herein before contained shall extend to or interfere with the business of any duly qualified medical practitioner or of any member of the Royal College of Veterinary Surgeons of Great Britain, nor with the making or dealing in patent medicines, nor with the business of wholesale dealers in supplying poisons in the ordinary course of wholesale dealing, nor with the retailing of arsenic, oxalic acid, cyanide of potassium, or corrosive sublimate, for use in manufactures or photography; and upon the decease of any Pharmaceutical Chemist or Chemist and Druggist actually in business at the time of his death, it shall be lawful for any executor, administrator, or trustee of the estate of such Pharmaceutical Chemist or Chemist and Druggist to continue such business if and so long only as such business shall be *bonâ fide* conducted by a duly qualified Assistant, and a duly qualified Assistant, within the meaning of this clause, shall be a Pharmaceutical Chemist or a Chemist and Druggist registered by the Registrar under the Pharmacy Act or this Act.

Poisons to be distinctly labelled.

17. It shall not be lawful to sell any poison, either wholesale or by retail, unless the box, bottle, vessel, wrapper, or cover in which such poison is contained be distinctly labelled with the name of the article and the word poison, and with the name and address of the seller of the poison; and any seller of any poison not so distinctly labelled shall, upon a summary conviction before two Justices of the Peace in England or the Sheriff in Scotland, be liable to a penalty not exceeding £5 for the first offence, and to a penalty not exceeding £10 for the second offence, and for the purposes of this clause the person on whose behalf

Penalty on omissions.

any sale is made by any apprentice or servant shall be deemed to be the seller, but the provisions of this clause, so far as regards the name and address of the seller, shall not apply to articles to be exported from Great Britain by wholesale dealers, and nothing in this Act contained shall repeal or affect any of the provisions of an Act of the Session holden in the fourteenth and fifteenth years of the reign of her present Majesty, intituled "An Act to regulate the Sale of Arsenic."

14 & 15 Vict. c. 13.

18. Chemists and Druggists registered under this Act shall be deemed to be within the provisions of the second section of the Juries Act, 1862, in relation to the exemption from service on juries.

Registered persons exempt from juries.

19. Every person who, at the time of the passing of this Act, is or has been in business on his own account as a Chemist and Druggist as aforesaid, and who shall be registered as a Chemist and Druggist, shall be eligible to be elected, and continue a member of the Pharmaceutical Society according to the Bye-laws thereof; but no person shall, in right of membership acquired pursuant to this clause, be placed on the Register of Pharmaceutical Chemists, nor, save as is hereinafter expressly provided, be eligible for election to the Council of the Pharmaceutical Society.

Chemists and Druggists in business prior to passing of Act eligible for election as Members of Pharmaceutical Society.

20. Every person who is or has been in business on his own account as a Chemist and Druggist as aforesaid at the time of the passing of this Act, and who shall become a Member of the Pharmaceutical Society, shall be eligible for election to the Council of the Pharmaceutical Society; but the said Council shall not at any time contain more than seven Members who are not on the Register of Pharmaceutical Chemists, nor more than seven Members who shall not at the time of election *bonâ fide* reside within twelve miles by highway or road from the General Post-office in St. Martin's-le-Grand.

Council of Pharmaceutical Society.

21. Every Apprentice and Assistant, as described in clause 4 of this Act, who shall cause his name to be registered as provided in that clause, and every person who shall have been registered as a Chemist and Druggist under this Act, by reason of having obtained a certificate of qualification from the Board of Examiners, as provided in clause 6 of this Act, shall be eligible to be elected an Associate of the Pharmaceutical Society, and every such person so elected and continuing as such Associate, being in business on his own account, shall have the privilege of attending all meetings of the said Society and of voting thereat, and otherwise taking part in the proceedings of such meetings, in the same manner as Members of the said Society; provided always that such Associates contribute to the funds of the said Society the same Fees or Subscriptions as Members contribute for the time being under the Bye-laws thereof.

Chemists and Druggists, registered under Clause 4 and Clause 6, eligible to be elected Associates, and being in business, have the privilege of voting in the Society, on paying the same subscriptions as Members.

22. At all meetings of the Pharmaceutical Society at which votes shall be given for the election of officers, all or any of the votes may be given either personally or by voting-papers, in a form to be defined in the Bye-laws of the said Society, or in a form to the like effect, such voting-papers being transmitted under cover to the Secretary, not less than one clear day prior to the day on which the election is to take place.

Voting papers for election of Council.

23. And whereas by the Charter of Incorporation of the said Pharmaceutical Society it is provided that the Council of the said Society shall have the sole control and management of the real and personal property of the said Society, subject to the Bye-laws thereof, and shall make provision thereout, or out of such part thereof as they shall think proper for the relief of the distressed Members or Associates of the said Society, and their widows and orphans, subject to the regulations and Bye-laws of the said Society. And whereas, for extending the benefits which have

Benevolent Fund may be applied to past Members and Associates, also to Pharmacists and Chemists and Druggists.

resulted from the said provision in the said Charter of Incorporation, it is desirable that additional power should be granted to the said Council, so it enacted that from and after the passing of this Act, the said Council may make provision out of the real and personal property aforesaid, and out of any special fund, known as the Benevolent Fund, not only for the relief of the distressed Members or Associates of the said Society and their widows and orphans, subject to the said regulations and Bye-laws, but also for all persons who may have been and have ceased to be Members or Associates of the said Society, or who may be or have been duly registered as "Pharmaceutical Chemists" or "Chemists and Druggists," and the widows and orphans of such persons, subject to the regulations and Bye-laws of the said Society.

Registration
under Medi-
cal Act.

Short Title.

24. Persons registered under "The Medical Act" shall not be or continue to be registered under this Act.

25. This Act may be cited as the Pharmacy Act, 1868.

SCHEDULE A.

Arsenic and its preparations.
Oxalic Acid.
Prussic Acid.
Chloroform.
Cyanides of Potassium and Mercury.
Strychnine, and all poisonous vegetable alkaloids and their salts.
Aconite and its preparations.
Emetic Tartar.
Corrosive Sublimate.
Belladonna and its preparations.
Essential Oil of Almonds, unless deprived of its Prussic Acid.
Cantharides.
Savin and its Oil.

SCHEDULE B.

Name.	Residence.	Qualification.
A. B.	Oxford Street, London.	In business prior to Pharmacy Act, 1868.
C. D.	George Street, Edinburgh.	Examined and certified.
E. F.	Cheapside, London.	Apprentice or Assistant prior to Pharmacy Act, 1868.

SCHEDULE C.

Declaration by a person who was in business as a Chemist and Druggist in Great Britain before the Pharmacy Act, 1868.

To the Registrar of the Pharmaceutical Society of Great Britain.

I, _____, residing at _____, in the county of _____, hereby declare that I was in business as a Chemist and Druggist in the keeping of open shop for the compounding of the prescriptions of duly qualified medical practitioners at _____, in the county of _____, on or before the _____ day of _____, 186 ____.

Signed (Name.) _____

Dated this _____ day of _____, 18 ____.

SCHEDULE D.

Declaration to be signed by a duly qualified Medical Practitioner, or Magistrate, respecting a person who was in business as a Chemist and Druggist in Great Britain before the Pharmacy Act, 1868.

To the Registrar of the Pharmaceutical Society of Great Britain.

I, _____, residing at _____, in the county of _____, hereby declare that I am a duly qualified Medical Practitioner [or Magistrate], and that to my knowledge _____, residing at _____, in the county of _____, was in business as a Chemist and Druggist, in the keeping of open shop for the compounding of the prescriptions of duly qualified Medical Practitioners, before the _____ day of _____, 186 ____.

(Signed)

SCHEDULE E.

Declarations to be signed by and on behalf of any Apprentice or Assistant claiming to be registered under the Pharmacy Act, 1868.

To the Registrar of the Pharmaceutical Society of Great Britain.

I hereby declare that the undersigned _____, residing at _____, in the county of _____, had before the passing of the Pharmacy Act, 1868, been employed in dispensing and compounding prescriptions, as an Assistant to a Pharmaceutical Chemist or Chemist and Druggist, and attained the age of twenty-one years [or had been apprenticed to a Pharmaceutical Chemist or Chemist and Druggist, keeping open shop for the compounding of prescriptions of duly qualified medical men].

As witness my hand, this _____ day of _____, 186 ____.
A. B., duly qualified Medical Practitioner.
C. D., Pharmaceutical Chemist.
E. F., Chemist and Druggist.
G. H., Magistrate.

(To be signed by one of the four parties named.)

I hereby declare that I was an Apprentice to _____ of _____ in the county of _____ in the year _____.

L. M., Apprentice.

I hereby declare that I was an Assistant to _____ of _____ in the county of _____ in the year _____, and was actually engaged in dispensing and compounding prescriptions, and that I had attained the full age of twenty-one years at the time of the passing of the Pharmacy Act, 1868.

N. O., Assistant.

MEDICINE.

AN INQUIRY (FROM A PHILOSOPHICAL POINT OF VIEW)
CONCERNING ITS TRUE VALUE IN THE TREATMENT OF
DISEASE.*

BY MR. W. WILLMOTT.

GENTLEMEN,—The title I have chosen for my paper this evening may possibly lead you to the conclusion that the subject is one which, strictly speaking, does not come within the province of the pharmaceutical chemist to consider or discuss. I can quite understand that such a view as this may be taken under the plea of orthodoxy, and with the full approbation and consent of that significant old Latin proverb, *ne sutor ultra crepidam*—a proverb, let me say, at once consistent and wise. But whilst I am fully sensible of the line that should be drawn between the profession of Medicine and the profession of Pharmacy, I cannot but think that the science of Therapeutics, so far as it may have reference to our intimate connection with Medicine and its administration, is a study which may legitimately claim a fair share of our attention and consideration.† If it should still be objected (though I do not anticipate the objection) that it is no business of ours, and that it does not in any way concern us, I must be allowed to hold a different opinion. It concerns us, I think, more especially in three ways, namely—as a question of duty; as a question having a moral aspect, which we cannot consistently evade; and as a question of the success or otherwise of the pharmaceutical calling. It is not enough that we should be scientific men, possessing a knowledge of chemistry, pharmacy, materia medica, botany, and so forth—these, I confess, are acquirements it should be our first object to attain—but we should also know something of the end and aim of Medicine, and become acquainted, as far as may be, with its action and effect on the system, both in sickness and in health. The possession of such knowledge would not necessarily make us physicians, or doctors, or prescribers for disease. This is not our ambition, and it ought not to be our custom or our aim. Prescribing medicine for disease, though sometimes a matter of mere routine, should be the work alone of the specially educated medical practitioner. Let us be always careful to distinguish between what it is our duty to know, and what it is our duty

* Read to the members of the Chemists' Assistants' Association, May 14th, 1868. Communicated by the Author.

† "Therapeutics must be understood to embrace all that relates to the application of remedies to the cure of disease. The Science must be distinguished from the Practice of Therapeutics."—Headland.

to do in the possession or application of the knowledge so acquired.

But this question has, for us, a moral aspect, which we cannot consistently evade. Are we quite sure that in our daily transactions as dealers in drugs and medicinal compounds, we are offering a fair equivalent for value received? Are we quite sure that medicine is not, in great part, an entire myth, and that we are not carrying on a process of deception, to the injury of our customers and friends? I am well aware that this proposition will appear to you somewhat startling. You have never, I know, regarded Pharmacy from such a doubtful point of view. Nevertheless, anything which may descend to us from persons in undoubted authority is worth, at least, a passing thought. We are told (and I have it in print) that "patent medicines," so called, are nothing more nor less than a "gigantic swindle." Now if "patent" medicines are a "gigantic swindle," what relation does this sweeping condemnation bear to medicines which are not patent, seeing that both are drug-combinations taken and administered for the same end, namely, the relief or cure of bodily ailments and affections? Not exactly to answer this question, the falsehood and deception which usually, though not always, accompany patent medicines, would seem to prove the truth of the charge brought against them. If, then, by selling these medicines, we are fostering and encouraging this gigantic swindle—this immense fraud upon the public, how shall we answer for our position; how, in a moral sense, justify our conduct? You may say that it is purely a question of trade, and trade has nothing to do with fine-drawn ethical considerations such as these; or you may express your conviction that patent medicines are not a swindle, but simply good combinations of established remedies, well calculated in many, if not in the majority of instances to prove beneficial to those who use them. It would be foreign to my purpose this evening to enlarge upon this point; my object, for the moment, being to show that it concerns us to know something of the value of medicines, as such, in order that we may carry on our business with a clear conscience and an honest conviction, by no means to be despised, that, whilst seeking our own material interests, we are at the same time conferring an unequivocal good on mankind and the suffering world at large.

But, lastly, the question concerns us as one having reference to the success or otherwise of the pharmaceutical calling. Pharmacy, as a remunerative occupation for the many, will succeed or fail as the very agent upon which its vitality depends is found, or is not found, in the process of enlightenment, to answer the purpose for which it is so extensively employed. Are there not *in progress* certain symptoms or signs which speak significantly of the future? Will the red and green lights of a hundred years hence be half so numerous as they are now, not to hint at the possibility, remote it is true, of their being extinguished altogether? It is undeniable that at the present time a vast and, it is to be feared, an increasing scepticism with regard to the efficacy of drugs in the treatment of disease, pervades the medical profession. Do not let us shut our eyes to this fact. Whichever way we turn, there is ample evidence that, as time progresses, greater reliance is being placed, for success in restoring health to the sick, on the innate power of nature—the *vis medicatrix nature*, as it is called,—to the exclusion and rejection of drug medication. "An eclipse of faith," says Dr. Tilt, "is spreading over the face of English Medicine."

I do not wish to raise a cry of alarm, for, I believe (notwithstanding the rapid spread of sanatory science, and the teachings of physiologists regarding the physical and organic laws), that humanity is so utterly powerless to resist disease, and so wishful to get rid of it when present, that no possible means for effecting this desirable end will at any time be altogether neglected. But it is nevertheless a fact that where, formerly, drugs were extensively prescribed and heroically administered, hygienic measures, and what is called "expectancy," are now in the ascendant. Food is the agent which is to accomplish great things, and the "principle" which is to supply the necessary force or vitality to the weakened system.* Faith in the efficacy of medicine

is on the wane, and to order little or none at all is now the mood of many of our best and ablest physicians. Can it consistently be said that we, to whom medicine is everything or nothing, ought to be unconcerned about a state of things like this? Even the *Pharmaceutical Journal*, which we look upon, with something like pride, as our "guide, philosopher, and friend" in matters of difficulty appertaining to pharmaceutical ethics, and which, unlike its contemporary the *CHEMIST AND DRUGGIST*, now so well deserving of support, maintains a persistent and, perhaps, too cautious reticence with regard to medicine and its administration—even, I say, the *Pharmaceutical Journal* ventures to express an opinion that the "physiological action of medicines" is a subject which will prove of much interest to its readers; and hopes the same may "continue to receive the attention its importance demands."

Not only will the subject prove of much interest to the readers of the *Pharmaceutical Journal*, but it may be said to be a question of the success of our art, as a distinct calling, except to the very few. Already, according to competent authority, we are selling "broom-sticks and fishing-rods" to make good the absence of demand for articles of legitimate worth. How will it fare with us in time to come, if the truth should really be found to lie in the direction in which we are now so certainly progressing? Our anticipations may be groundless and without adequate support. Fashions may change, and new types of disease may bring back to us the lancet and the old heroic régime. But as the question seems calculated to affect us more or less in the manner indicated, we are desirous to ascertain how far the assumption (that is, the assumption concerning the inefficacy of drugs) is based upon truth, and how far drug-medication may be replaced by the unassisted powers of nature in the development of the resistance necessary to overcome the sharp attacks of indisposition and disease. We may not proceed very far in this direction, for the more certain means are not at our disposal; but the examination of evidence will, at least, extend our field of observation, and, as I hope, furnish some valuable matter upon which a judgment more or less correct may with safety be pronounced.

Having thus shown, as I trust, that the subject is one in which we are deeply concerned, and one, therefore, which may legitimately come under our notice, I must still ask your attention to one or two remarks of a preliminary character respecting the inquiry I have undertaken to place before you.

It is not my intention to advocate medicine, nor to condemn it; nor, indeed, to make any dogmatic assertions one way or the other. I propose simply to take the evidence available to individual research, and, in a philosophic spirit, endeavour to deduce therefrom such indications or landmarks as may form a fair basis for presumptive inference and opinion. This, in fact, under the inquiry proposed, is all that we can do, for I should wish you to observe that, in the title I have chosen, I employ the term "philosophical" as distinct from "medical" or "scientific," in the sense that, whilst the former is general, the two latter are special, and have an individuality and a meaning which the terms themselves sufficiently express. By a general inquiry we can only explore opinion and accept the testimony on either side which may come before us, but by a specially organized investigation, facts of much value may be certainly arrived at.

It is clearly indicative of the want of faith to which we have already alluded, that such an investigation into the physiological action and therapeutic value of drugs has been proposed, and is now being advocated with much consistency and force by many of the more eminent and liberal-minded members of the medical profession. I need scarcely intimate that it is to these gentlemen alone that the management of so important a work could with safety be entrusted.

You will, perhaps, say that something definite should have been already arrived at from the experience gained in the numberless large hospitals and institutions with which we are favoured in this country. But it is not so. On the contrary, hospital treatment is less certain and less successful than any other. It is found that the mortality of patients treated in hospitals is 1 in 88, as against 1 in 212 treated at their own abodes. This, however, is the French calculation. At home, we are told that "the mortality of the public institutions of the country is ten times as high as

* The following ably-written articles bearing on this subject are well worth attentive perusal:—"Alimentation in Disease," by Dr. Austin Flint; "Nutrition, the Basis of the Treatment of Disease," by Professor Graily Hewitt; and "On Food, as a Means of Prevention of Disease," by Mr. Erasmus Wilson.

the mortality in the population generally." There must be a reason for this, and a reason, too, well worth discovering. Has the greater success of home treatment anything to do with the care which is exercised in the preparation of medicines by those who are interested in the progress and perfection of pharmacy?

The only way, as I think, to test the value of drugs as remedial agents, is practically to work out a pre-arranged plan on an extended scale.* A large number of cases—say one or two thousand—of any given disease, should be placed under precisely similar circumstances, as regards hygienic and other measures. Drugs should be administered to one portion, but withheld from the other. The results, accurately recorded, would be most valuable, and would form a clear certainty for the judgment, if not for the actual guidance of the physician in individual cases. Notwithstanding the difficulties which are said to stand in the way of such an undertaking, I believe it to be quite possible, and I may say desirable also, inasmuch as it would involve something of an approach to the settlement of a question, which for centuries and ages past has been the great mystery and the great bane of the medical art. I can only add that it must be the sincere wish of all philosophical inquirers that such an investigation as this may be attempted.

In the meanwhile, in a very humble way, I venture, as a member of this association, and one interested in the progress of science, whether applied to the medical or pharmaceutical profession, to adopt the subject for consideration, with a view more especially to ascertain what lessons it may have for us, and how far our calling may truthfully represent the good to be derived from a generous confidence in the power, judgment, and skill of the experienced and zealous practitioner of medicine.

You will observe that the exact title of my paper is as follows:—"Medicine: an Inquiry (from a Philosophical Point of View) Concerning its True Value in the Treatment of Disease."†

Now, before we can estimate the true value of medicine in the treatment of disease, we must endeavour to ascertain if it has any value at all. Hitherto we have proceeded on the assumption that it has, but at the present time, as we have seen, much doubt exists as to how far this assumption may prove to be in accordance with fact. You will, perhaps, wonder there should be a moment's hesitation about what appears to be so clear and undeniable. Numberless cases have occurred, and, it may be said, do occur almost daily, to testify to the utility of medicine in relieving pain and other urgent symptoms which may be present in the system. You could, in all probability, relate from your own individual experience many such instances, and speak confidently of the undoubted benefit to be derived from the administration of some particular preparation or drug. Evidence of this kind may be met with to an almost unlimited extent, scattered throughout the pages of medical literature. Individual testimony, however, has this disadvantage. The medicine which will apparently succeed in one case will altogether fail in the next, and the next, and the next.‡ Where, then, is its power—where the reliance that can safely be said to be placed upon it?

Disease attacks us and we are ill. A course of medicine is prescribed by the medical attendant, and taken as directed. In due time we throw off the attack and get well. Where is the certainty that we should not have recovered in an equally, if not in a more, satisfactory manner without such course of medicine? How far can it safely be said that the same was instrumental in causing or promoting the recovery? "We may give a certain drug," says a medical authority, "an indefinite number of times, and believe it to be efficacious, but how can we possibly tell its exact use until we pretty accurately determine what course the disease will run without it?" This, I think, is a very apt and very significant remark. Until the natural history of disease is known or understood, we must of necessity remain more or less in the dark. I am acquainted with a person who, on one occasion, was confined to his bed-room with illness, but

who steadily refused to take any medicine whatever. He recovered in time, and is now as strong as before. "But," said I, "would you not have regained your health more rapidly if your scepticism had not been so great, or if your faith had been greater?" "Ah!" said he, "I don't know; it is impossible to say." Precisely! and that is just the difficulty in which we are placed. The uncertainty of the whole matter has given rise, in this age of rapid progress, to a scepticism which is beginning in earnest to make itself felt. Let us for a moment put aside partial experience, and view the question in its broader aspect, for it is in this way only that we can arrive at facts which will be of any real service. I learn from the *Lancet* that "fourteen metropolitan hospitals, to say nothing of the numerous smaller and special institutions in existence, give annual relief to over 33,000 in-patients and to more than 550,000 out-patients, or nearly a fifth of the three million inhabitants of London." If we add to these the special institutions here omitted, and the relief given by "medical officers of the Poor-law service," and then pass in review the thousands of bottles of medicine sent out daily from the private surgeries of medical men, and the still larger number by far prepared and dispensed by the chemist and druggist, together with the family medicines and "patent" medicines purchased by the public on their own account, or in accordance with their own judgment—if, I say, we take all this into consideration, or combine all these sources of supply, we shall have a quantity of medicine prescribed and administered daily for the relief of sickness and disease which is absolutely astounding. Are all these hundreds of gallons of nauseous liquid poured into the human stomach with a good or with an evil result? Can or will the Registrar-General enlighten us as to how the death-rate is affected thereby? Probably not; but this much we know,—a slight change in the humidity, or in the temperature of the atmosphere, or a slight disturbance of its electrical condition, will often affect the health of the public for the worse in spite of all the medicine which it is possible to administer.* Where, then, is the power of the latter if it can do absolutely nothing towards meeting a contingency like this? Can we be altogether surprised that so many men of undoubted eminence in their profession have recorded their experience in favour of the laws of nature and against drug-medication? It was originally my intention to show the extent of the moaning herein expressed by placing before you several extracts of much import from authorities, or sources, which could not fail to command consideration and respect. As, however, time will not permit me to do this, I must remark, simply, that the selection I have made, comprising something like twenty pages of closely-written matter, forms an array of evidence which places medicine in a very sorry light indeed. How, or in what manner, can such evidence be met? Can we contradict or set aside what has been so positively stated by these authorities, who, it must be borne in mind, are not mere scribblers, but men of great eminence and ability? We cannot, but it is still open to us to examine the light in which medicine is regarded by equally eminent men, whose zeal and confidence still remain, and who have not lost "the faith and the mood of physicians."

If we say that a large majority of the medical profession believe in the efficacy, to a greater or less extent, of the drugs they prescribe, we shall not be far wrong. Such a belief has always existed; but it is clear that it presented a very different aspect formerly to that which it presents now. The history of medicine, in fact, reveals to us a strange complication of credulity and superstition. One feature connected with it is singularly noticeable. From the earliest ages down to the present time, there has been an intense desire, with a view either to wealth or fame, to discover one remedy or one law, which shall prove of universal application. Sometimes a fancied discovery of this kind is called a "doctrine," such as the "Doctrine of Signatures," and the

* Such a plan is very ably set forth in the *British Medical Journal* for April 11th, 1863.

† I make no attempt to define disease, for no satisfactory definition has yet been given. But in this Paper, I adopt the widest application of which the term admits.

‡ "Mere accumulation of opinions possesses no definite value."—*British Medical Journal*.

* The deaths from diseases of the respiratory organs have not varied to any great extent during the last seventeen years, but the latter half of this period shows a decided increase in the face of the best and most generous treatment. From this circumstance Dr. Farr "deduces the practical inference"—that more medicine should be given, or that additional remedies should be supplied? Nothing of the sort. He "deduces the practical inference that an effort should be made to diminish the smoke of towns as the most obvious means to reduce the present excessive fatality of those diseases."

"Doctrine of *Similia Similibus Curantur*." Sometimes it is called a "method," such as the "Expectant Method," much in favour, as we have seen, at the present time. Sometimes it is called a "treatment," such as the "Antiseptic Treatment," the "Chrono-thermal Treatment," and the "Eclectic Treatment;" and sometimes it is called a "cure," such as the "Water Cure," the "Movement Cure," and the "Great Sulphur Cure." All these, or the majority of them (true, perhaps, to a limited extent, and, because true, so far successful), have failed, and always will fail, when indiscriminately or universally applied. No discovery of this kind can or will ever be made, simply because there is no such remedy or law to discover. Disease, like every other phenomenon, is subject to an infinity of laws—if, indeed, they are laws at all, which must be met according to the form and direction which, in each case, they may have assumed. This is the reason why what is called "allopathy," or orthodox medicine, includes within its wide range all the philosophy which, so far as we have yet gone, it is possible to bring into active operation. We shall presently see how it comes to pass that one remedy is so largely applicable, and one mode of treatment so uniformly safe, in a given number of cases.

We need not, I think, go beyond our own shores in search of skill and ability in dealing with disease. I am not aware that in France, America, or elsewhere, the treatment adopted is more successful than that approved of in this country. The system, therefore, as, in a manner, indicated in our national pharmacopœia, is the one to which we look with confidence as the best that can be devised in the present state of our therapeutical knowledge. What, then, are the prominent features of this system in the hands of the orthodox practitioner? In what light is medicine regarded by those of our physicians who retain a welcome and an honest faith in the work of their profession?

In seeking an answer to these questions, with a view to the present inquiry, I adopted a plan which, I have no doubt, you will regard as satisfactory for the purpose intended. From a large number of prescriptions actually dispensed in the city of London, I selected one thousand. These were written by different medical men for different diseases, and different symptoms of disease. They were also written at different seasons of the year (Spring, Summer, Autumn, and Winter), during a period extending over the past ten years. I did not select them on account of any speciality they possessed, but took them as they were copied, in writing, in the book kept, as usual, for that purpose. As, in this work, my eye passed over many thousands of prescriptions, I was enabled to satisfy myself that those I had selected represented with sufficient accuracy any similar number which might be collected in any part of London, and, by fair inference, any multiple of that number to the extent of hundreds of thousands. Here, then, I possessed a true key to the "existing state of medical practice" in this country.

Having these prescriptions at my command, I submitted them to an analysis (if I may use the term) which, I am bound to say, proved to be a work of very considerable time and labour. The results arrived at after much careful noting, I will now place before you.

Whilst the Pharmacopœia contains 768 medicaments simple and compound, medical men do not adopt in actual practice more than 485; and what is rather remarkable, three-fourths, or 75 per cent., of these occur less than once in every 100 prescriptions written; so that if we take the remaining fourth, or the leading remedies as they may be called, we shall find that these are prescribed three times where the rest are only prescribed once. The inference to be drawn from this is, that if a medical practitioner were to treat disease with these 120 leading medicines, according as he may select them, and no others—presuming the whole 485, now in use, to be of equal value—the "odds," if I may be allowed the expression, would be 1 to 3 against his success as compared with the practitioner who held the advantage of the entire range of remedies; but as these medicines are not all of equivalent value, as shown by the fact that 75 per cent. occur less than once in every 100 prescriptions, the advantage of the additional number above one-fourth would be so reduced as to render the chances of the two practitioners very nearly equal. We shall see what further inference can be drawn in this direction.

It is impossible to pass over the fact that a few medicines take the lead in medical practice to the comparative ex-

clusion and neglect of all the rest. Quinine heads the list by a long way, then comes Chloric Ether, Bicarbonate of Potash, Aromatic Spirit of Ammonia, Iodide of Potassium, Mercurial Pill, Compound Extract of Colocynth, and so on. Twenty-five of these medicines show an average occurrence of once in seventeen prescriptions, whilst those which remain, taken collectively, show an average occurrence of once in one hundred and sixty-six prescriptions. This is scarcely, perhaps, a fair calculation, but the difference is a very wide one, and serves to show where the greatest reliance in the power of drugs may be found to exist.

With regard to the prescriptions examined, it is well worthy of note, that of the 485 medicines ordered or prescribed, 429 are to be met with in the Pharmacopœia; a result showing the desirability of a thorough knowledge and appreciation on our parts of this important work.

It is perhaps, however, in the form of simple remedies that we shall best estimate the value of the medicines prescribed by the physician. Here the number is reduced to 171, and the order of things is somewhat changed. Mercury takes the lead and stands prominently at the head of the list. Mercury, the very name of which strikes terror into the minds of nervous and timid patients, is still the foremost remedial agent employed by the medical profession.* After mercury we have potash, then bark, then opium, and then iron. If we take twenty-five of these leading simple substances, as in the case of the compounds, we shall find that 95 per cent. of all the prescriptions written contain one or more of them in some recognised form. This, I think, brings the whole matter into the smallest compass, and places us in a position to offer such further brief comments as the subject may seem to require.

Mercury, potash, bark, opium, and iron. Are these medicinal substances of any service in combating the symptoms of disease? If not, the whole system of medicine is shaken, and scepticism is only too well founded. If, on the contrary, they are of service, then it is true philosophy to extend our faith, and, in the absence of certainty, or in the absence of probable injury from such a course, rely on what is possible as regards the entire scope of the *Materia Medica*.† Much, I think, may be said to show, in a manner sufficiently conclusive, that, with respect to disease, Medicine possesses a power, the absence of which would inevitably lead to additional and prolonged suffering. But it is to be specially remembered that this power is limited. If you ask me where such limit terminates, I reply that it is beyond the scope of our present means to ascertain; but of this we may be certain, that the true value of medicine will be exactly proportionate to the skill with which the remedial power it possesses, within the limit indicated, is developed in each particular case. It is this fact which renders it so undesirable to follow a routine method to the exclusion, perhaps, of timely and efficient aid. If, indeed, we look at the constancy with which certain medicines are ordered, the treatment of disease would appear, at first sight, to be solely a question of routine; these medicines being administered for the relief of a particular set of symptoms because they have been found from experience to be of service in the majority of such cases. But a prescription is, or ought to be, a scientific document, the result of an adequate knowledge of the physical sciences, and a clear appreciation

* "And yet," says Sir Thomas Watson, "we are distracted by doubts whether the powerful influence it exercises on the body be for good or for evil in the diseases for which it is given." Could anything be more eminently unsatisfactory, or more abundantly disheartening than this? Of all the medicaments in the *Materia Medica*, the one which is most relied on, and most frequently prescribed for the cure of sickness and disease, is still so far a puzzle and a mystery to the medical profession, that it is not known "whether the powerful influence it exercises on the body be for good or for evil in the diseases for which it is given." Well, indeed, may the natural history of disease be asked for, and an investigation into the physiological action of drugs be demanded, with a view to placing the whole therapeutical art on a surer and more scientific foundation.

† There can be no doubt that a large quantity of medicine may be taken without real injury to the system. Nature is very accommodating to substances generally regarded as highly powerful or deleterious. She recoils at first, but soon manifests a comparative indifference to their peculiar properties; as witness the atmosphere of underground railways and coal mines, containing sulphurous acid and carbonic acid gases; and the large quantities of alcohol, opium, and tobacco, consumed with apparent impunity by the people of all nations. Even arsenic may be taken in poisonous proportions, without ill effects, by the mere force of habit. The plan, therefore, of trying various remedies, where such is admissible, with a view to the possibility of the good to be derived from them, seems to be a wise and reasonable one in every respect.

of all those minutiae with regard to compound medicines which are so essential to their success. If, therefore, to write a prescription were the sole duty of the physician, the course of special study through which he passes would not be lost, but, on the contrary, would maintain all the importance which his additional duties now serve to impart. To obtain the advantage to be derived from medicine to the utmost extent of its limits, in the presence of an uncertainty which ever-varying circumstances must necessarily engender, is a work offering scope for judgment and ability of the very highest order. It is quite true that if a powerful drug, such as opium or digitalis, were given to a large number of persons, the similarity of circumstance in each instance would enable us to estimate, with a fair degree of certainty, the probable result. One stomach bears a considerable resemblance to another stomach throughout mankind. It is this similarity which renders any single remedy of known repute applicable to so many cases; and the same may be said, in degree, of almost any drug in the *Materia Medica*. So far circumstances are sufficiently constant to sanction with a certain reserve, the adoption of such a mode of procedure. Universal medicines will exhibit their good effects, or supposed good effects, in a certain percentage of appropriate cases—considered appropriate as the result, solely, of experience—in which they are administered; and it is upon this principle, which is purely empirical, that drugs of probable efficacy are often—perhaps I ought to say are most frequently—recommended and taken. If, for instance, we were to select one thousand cases of ordinary cough, and administer to each the compound tincture of camphor, i.e. the pectoric, of the pharmacopœia, there is every probability that 90 per cent. of such cases would be relieved thereby. True, but how many would be cured? It is not venturing too far to say that none would be cured by the medicine itself. There are few medicines, if any, whether their effects be produced by chemical, mechanical, or vital processes, that possess a direct curative action.* That which cures, call it force, vitality, or what you will, resides in the living body, and is a property, so to speak, of that body, possessed of limited power according to the relationship it bears, at any moment of time, to the laws of organised existence. The discovery to be made, therefore, is not so much the direct action of medicines in the system, if I may draw the distinction, as the exact position they individually occupy with regard to the reparative tendency which is there present. We know that medicines will produce an effect according as their properties are sedative, astringent, antacid, and so on; but we are not so well acquainted with the extent to which such effect is really useful in counteracting abnormal, or faulty states of the system. Medicine will not cure, but it will often, I think, do one of two things. In either case its action is indirect. It will assist the healing power on the one hand, or it will add to it on the other. It is easy to see that this indirect action is altogether of a subordinate character. If the reparative or curative power be still in abeyance, the drug, indeed, will have done all that it was capable of doing, but the cure will be indefinitely prolonged, or it will become altogether impossible. This, I think, is where our faith has been at fault; and there would now appear to be some fear of our going to the extreme in an opposite direction. If we have expected too much from medicine, or if we have thought its virtues unbounded, the reaction may be natural, but it is scarcely philosophical. It is in the indirect, and not in the curative action of drugs that we must look for the true source of their remedial power to whatever extent they may be so imbued; and here we seem to have an approach to the secret involved in the question of the *vis medicatrix nature* as against the artificial treatment of disease by medicinal agents and compounds. We can assist nature and that is all. The idea is a very old one, but it has scarcely yet been fully recognised in practice. The beneficial action of quinine in ague, colchicum in gout, and arsenic in eczema, &c., is very mysterious, and quite beyond our comprehension; but it is still directed to altering a morbid condition under the guiding influence, so to speak, of constitutional agency. Hence, similar symptoms, treated with the same remedy, will disappear more rapidly in one

case than in another. Where the constitution is itself the cause of disease, it will often happen that medicine will avail but little, and the symptoms will be merely palliated, but not removed. The true physician will, of course, recognise this, and act accordingly. Success in curing disease demands that diathesis and drug-action should become a united study.

Routine treatment may be available to a limited extent, for, as we have seen in the case of our pectoric, opium will relieve pain and calm irritation in almost every instance in which it is given. Other drugs will act with more or less certainty according to their respective properties. So far there is a similarity in the stomach and nervous system, and a constancy in the drug itself, which may fairly be depended upon. We know this from experience, and hence such a method of procedure is termed "empirical." But still it remains that science and positive skill will appreciate and perceive those essential points which, viewed in the light of routine merely, may be dim and uncertain. Here then is our hope. We want more light—more knowledge. If these, in the present stage of our progress, sometimes fail, as fail they will, it detracts nothing from their innate power to overcome, as far as may be, the many and great difficulties of the medical art. Let us hope that time will, in such wise, carry us farther and farther away from the region of uncertainty and doubt, and lead us to a more intimate acquaintance with the varied and ever-varying conditions of universal law.

For ourselves, let it be our constant care to see that our drugs have every chance of gaining the credit which is no doubt justly their due, and, by improved processes derived from an increasing knowledge of all that appertains to chemical, botanical, and pharmaceutical science, to assist in securing that good result to which the efforts of our physiologists are now significantly directed. So may we confidently anticipate the near approach of a time when a clearer light will appear as the reward of diligent investigation, and when "medicine will obtain the highest place among all the arts that minister to the welfare and happiness of man."



Pharmacy and Therapeutics.

ON MEDICINAL INHALATIONS, WITH DESCRIPTION OF AN IMPROVED APPARATUS FOR THE PRODUCTION OF MEDICATED VAPOURS.

BY JAMES ADAMS, M.D.*

IN the treatment of affections of the lungs and air passages, the inhalation of medicated vapours has been practised from the earliest times. The chiefest medical authorities speak in terms of high commendation of such agency, whether as remedies bringing immediate relief to the patient, or as a branch of therapeutics, through which specific modes of treatment for some diseases may ultimately be reached. But owing to several causes it happens that, unless by a limited number of medical men, the use of medicated inhalations is only occasionally practised. Among these causes, there is no doubt the great trouble and loss of valuable time that is involved in instructing a patient or his friends in the proper use of an apparatus, or in the most suitable arrangements for making the inhalations efficacious. But I am inclined to think that the inefficiency of most of the contrivances that have hitherto been easily accessible, and the cost of others, has had a greater deterring influence. And still greater influence must be accorded

* Dr. Benzo Jones favors the chemical theory of the action of medicines in the system; whilst Dr. Headland thinks the vital the most plausible.

* Read before the Glasgow Medico-Chirurgical Society, 7th February, 1898.

to the fact, that until a late period—until the present time I may say—there has not existed a means by which medicaments, however likely and however potent, could be applied to the mucous lining of the air passages, unless that these substances were either volatile in themselves, or were capable of being dissipated in the air by the action of heat artificially applied. It is to this difficulty, or rather to the methods that have been successfully contrived for overcoming it, that I now wish to direct the attention of the society. And, under the pretext of submitting to your inspection a convenient modification of an apparatus, on which I have been expending my mechanical powers, and which I have very largely used, I hope to elicit the experience of some who can speak from actual observation of the effects of medicinal inhalations, and to enlist the thoughtful consideration of others to whom this mode of treatment is comparatively new, or altogether untried. It may be well that I should first refer to some of the contrivances which have hitherto been in use. Hippocrates describes an apparatus consisting of a pot, the lid of which had an opening for the reception of a reed, through which the vapours escaped and were inhaled through the open mouth, while moistened sponges were employed to protect the mouth from being scalded. In later times the methods employed have been various, but usually of a very simple kind, and—discarding all consideration of complicated costly arrangements, such as apartments specially constructed,—have been often extemporised with a reference to the agent made use of. Thus we have tar heated, with certain precautions, in an iron ladle or pot, as recommended by Sir Alexander Crichton, who saw it employed in Russia in the treatment of bronchitis and phthisis. I have often so used it myself, employing for the vaporisation of it and other solid substances, as sulphur, &c., such a simple apparatus as I now place on the table. The fumes arising from undressed wool, burned on an iron plate, were at one time much used on the recommendation of Dr. Physick, of New York. He found these fumes extremely serviceable for stimulating and healing external sores, and he thought he had found them of utility in phthisis when inhaled by the lungs. I have not unfrequently made use of strips of bibulous paper, soaked successively in solution of nitre and tincture of tolu or benzoin. These, when dry, are ignited on a plate, and a vapour is given out from which patients affected with asthma and chronic coughs say they often experience relief. Pastilles of varied composition are occasionally employed with similar results. But the most common method of employing inhalations consists in pouring boiling water upon vinegar, chlorine, ether, camphor, any of the Balsamic resins—or narcotic extracts, or their tinctures. These substances are placed in vessels variously constructed of block tin, pewter, glass, or earthenware, but all essentially consist of a vessel of large capacity, having a tubular orifice to which the patient applies his mouth and makes forcible inspiration. I place several of these instruments on the table; but I feel constrained to say that, notwithstanding their various names and modifications of form, material, and cost, a large-sized tea or coffee-pot, or common tea-kettle, will at any time form an efficient substitute. To all these contrivances I have an objection, that their use is fatiguing to the patient, who, I rarely find, can avoid making use of distressing and exhausting efforts at inhalation, not that there exists any necessity, but that the form and mode of using the instrument seem to suggest instinctively the effort. There are various other objections which I need not take time to enumerate, such as the rapid cooling of the hot water, and the triflingly small amount of vapour that is produced, &c. The steam of hot water, without any admixture, is often considered a desirable application to a dry and inflamed throat, trachea, or bronchial lining; and in illustration of the rough and ready means that are usually extemporised, I mention that on two recent occasions I knew a medical man, than whom there are few so full of practical resource, directing a basin of warm water, with a piece of heated iron or common fire-brick dropped into it, to keep up the steam; and another gentleman, one of our most accomplished physicians, instructing a roll of stiff paper to be tied to the spout of a kettle, so that the steam might be projected in a direction to reach the patient. The necessity of having recourse to such crude expedients, in the course of practice among the more comfortable classes,

where the mere question of cost for even a passing want is no real obstacle, shows that a convenient and portable contrivance has been a desideratum. Such instruments as were available applied only to substances in their nature volatile, but until the present time, so to speak, there has existed no means by which a non-volatile chemical body could come in contact with the organs of respiration. And this brings me to mention, and with respect, the name of Sales-Giron, of Pierrefond, in France, who, after two years consideration of the subject, laid before the Academy of Medicine of Paris, in 1858, an apparatus by means of which fluids containing dissolved medicaments, whether volatile or non-volatile, could be converted into a fine spray or mist capable of reaching the extreme bronchial tubes when inhaled. This proposed addition to practical medicine met, of course, with that careful and searching consideration that has ever been accorded by medical men to all proposals having for their object the relief of suffering humanity—a consideration, the spirit of which is commonly misunderstood by the general public, and, partly from combined ignorance, interested motive, and malicious intent, is commonly misrepresented by the charlatan. Sales-Giron, in the construction of his apparatus, carried out an idea which in some measure had been already practically applied, although in a coarse and little effective manner, in the vaporatory of certain sulphur baths. His instrument consisted of a vessel filled with fluid, in which was dissolved certain medicaments; and an air-pump was attached over the vessel. By the pressure of the air-pump the fluid was forcibly projected through a narrow aperture, and made to strike against a metal disc, when the stream was broken up and converted into a very minute vapour or spray. This he designated an *atomized* or *pulverized* fluid. When this portable apparatus was placed before the Academy, it became a question how far, if at all, such fluids could affect the respiratory tubes. A committee of investigation was appointed, and in 1862 the committee reported as a result of their labours, that the various substances used by them in their experiments reached not only to the trachea, but penetrated to the minute tubes and air-cells. And it was during the discussion of this report that Trousseau said, “I have applied the inhalations in many instances, and derived great benefit from them. They form a medicament of great value in affections of the pharynx, larynx, trachea, and the large bronchi. . . . In short, Sales-Giron has rendered a great service to the world at large by his invention of the treatment by means of pulverization.” This statement of the veteran Trousseau has been emphatically endorsed by the experience and commentaries of the numerous eminent medical men on the Continent and in this country, who have in a special manner given their attention to the subject. At the hands of several individuals who approved of the new invention, the apparatus of Sales-Giron underwent various modifications, the most important of which consisted in the contrivance of Dr. Bergson, who connected at right angles the capillary openings of two glass tubes, one of which, dipped into a vessel containing the liquid to be “pulverised”—the other tube having attached to it an india-rubber pipe with two india-rubber balls, one of which acted as a bellows, the other as a reservoir of air,—the identical instrument, in short, that is now advertised as “Dr. Dewar’s Patent Spray Producer,” the difference consisting in the tubes being made of vulcanite, with metal points instead of glass.” This very ingenious contrivance of Dr. Bergson has undergone various modifications. As a toy instrument, consisting of the tubes alone, it is used for sprinkling perfume, by simply blowing in one of the tubes while the other dips into the phial of perfume. When the horizontal tube is blown through with some force, the effect is to exhaust the air in the other which dips into fluid, the fluid rises to fill the vacuum, and reaching the capillary orifice at the top, is caught by the rushing blast, and blown into fine vapour. It is sometimes used in the same arrangement for sprinkling the larynx and fauces. Sometimes it is attached to a regularly constructed bellows, but the common construction is the original one, that of an india-rubber ball that requires to be compressed by the hand. Its action is, however, intermittent, producing

* Several months before Dr. Dewar’s patent, the instrument, but without metal points, was in regular course of sale by Thornton and Co., manufacturers of vulcanite.

alternately a coarse or a fine spray just as the pressure of the hand upon the ball relaxes or contracts. Under this pumping action the patient is liable to receive alternately the full blast of an uncomfortable cold sprinkling shower on his face, or to catch merely the extreme or furthest projected particles of the spray. To most individuals this cold blast is disagreeable, to many intolerable. To obviate this drawback, a spirit lamp is sometimes applied to heat the medicated fluid; and I have found it occasionally necessary to recommend that the vessel of medicated fluid should be placed in hot water and gently warmed, where the patient has happened to possess himself of an india-rubber ball apparatus. But the use of this india-rubber ball is very difficult. Practice and dexterity is required before anything like a continuous spray can be produced. The limited and monotonous movements of the fingers soon become irksome, and can only be maintained under a sense of fatigue or of cramp even by persons possessing considerable muscular power. On this point, I have made experiments, assisted by various individuals, and the result satisfies me that, even where the patient can have an assistant willing to give the requisite time and effort, that effort cannot be maintained in cases where the inhalations require to be frequent and of prolonged continuance. The efficient use of the apparatus by the invalid himself is, I think, quite out of the question. Unless, therefore, for the object of sprinkling the fauces or larynx, the use of any contrivance requiring manual exertion will not be continued by any practitioner or patient; and it was from a knowledge of these drawbacks that the latest improvement—that of producing a continuous and steady current of vapour by the action of a jet of steam—was applied by Dr. Siegle. It is this combination of Bergson and Siegle's several apparatus, known by the name of Dr. Siegle, that is now in approved use; and it consists in a small boiler heated with a spirit lamp, the capillary tubes being attached to the boiler. The steam produced in the boiler issues from one of the tubes with considerable force, and in a steady current, producing the same effect as a blast of compressed air, so that the medicated fluid is projected in a gentle warm mist or vapour, very much finer than could possibly be previously obtained by any other arrangement. Contrasting the vapour produced by this apparatus with that of the air-pump or bellows arrangement, I should liken the first to a fine Scotch mist, and the second to a plump of rain. Experiment has shown what, indeed, was already very obvious, *i.e.*, that this very minute division, or pulverisation, of the medicated fluids is a matter of prime importance, as the finer the vapour, the less the irritation to which it gives rise in passing the larynx, and the more effectually it penetrates to the minutest and furthest removed air tubes. The patient requires no assistant in working the instrument; he inhales without fatigue or flurry, and at leisure; and the inhalations can be repeated and prolonged indefinitely, and at pleasure. I have, during the last fifteen or eighteen months, had very extensive trials of this apparatus, and I think that, with some modifications it has undergone at my hands, and to which I will immediately refer, it leaves little to be desired. I was led to a consideration of these modifications on account of the high cost of the instruments, ranging from 15s. to 50s., and the occasional delay of many days, and even weeks, before they could be obtained. These were serious obstacles to a fair trial, or to the general use of the instrument, and I was unable to stimulate either instrument maker or druggist to find a remedy. At length got a smart tinsmith to work several patterns under my directions, and to produce an instrument equally effective with the most costly, and a respectable druggist* to give him an order for a supply. These, within the last few months, under the stimulus of the sulphur mania, have been sold in large numbers by several druggists, at an average cost of 4s. One druggist tells me he alone has sold upwards of 200. I felt interested in my attempts to improve the instrument, and you would be amused if I showed you all the patterns from first to last, and surprised if I were to go into a description of little details which required consideration or remedy before the instrument I now place on the table was produced. Suffice it that I feel warranted in saying that it is the most efficient, ready, and cheap instrument that can, at the present moment, be obtained. Let me state shortly some of

the qualities wherein I think that it contrasts with, and is superior to others. It is compact and ready for use, and is so put together that there is no necessity for frequent and nice adjustments, consequently the risk of troublesome disarrangements, or of accidental injury of the instrument is exceedingly small. The form of the boiler is distinctive and peculiar, and insures several advantages. Thus, the position of the water inlet enables the boiler to be filled to the proper height, and no more. Above the water line and inlet, there is a reservoir for steam, sufficiently large to maintain a continuous current of spray, and to project it to any distance that may reasonably be desired. This arrangement of the water inlet, steam chamber, and steam outlet, prevents a very annoying and even dangerous accident of frequent occurrence in instruments with the ordinary form of boiler, namely, the forcible projection of spirits of scalding water in the face of the patient, caused by the boiling liquid coming over with the steam. The heat from the spirit lamp is carried up through the centre of the boiler, thus reaching a larger heating surface of the boiler, generating steam more rapidly, keeping up a full supply of the steam, and at same time *super-heating* and *drying* the steam so generated. The steam escapes by a short horizontal nozzle at the top of the boiler, and necessarily is subjected at the instant of its escape to the action of the flue of the lamp, thus ensuring such a dry condition of the steam that it quickly becomes dissolved or dissipated in the air, so lessening the risk of annoyance to the patient, and at same time avoiding, in a great measure, the dilution of the medicated fluid with watery steam. By carrying the flue of the lamp through the centre of the boiler, the body of the instrument is not so hot but that a handle, attached to the lower and cooler portion of the case, can be grasped with comfort and safety even when in use. An alarming-looking and costly safety-valve, very liable to become stiff and unworkable, has been dispensed with, as I have found that a simple cork or india-rubber plug is equally efficient and more convenient. The box containing the phial of medicated fluid is soon warmed by the mode of its attachment to the case of the instrument, and there are other details of minor importance, which, when combined, make the apparatus more convenient in use. Before parting with my reference to this instrument, I may mention that I have experienced annoyance from finding my patterns and directions departed from occasionally by workmen who did not understand what I was aiming at. An old friend of mine,* who had opportunities of knowing this fact, suggested a patent, which I, of course, rejected, my ideas on medical patents being at one with my friend Dr. Gairdner.† I did not object, however, that he should do so, and, associating with himself a respectable druggist,‡ he has taken out a patent. I hope thus to ensure accuracy and good quality of workmanship with cheapness of manufacture. *This will certainly gratify me; but beyond this, I beg emphatically to say that I have no right of property in the instrument, and no interest whatever in its sale.*§ Having said so much regarding instruments, I have little time to refer to the medicaments, which may conveniently, and with probable advantage be employed in the form of vapour. Those with the use of which I am most familiar are solutions of Morphia, Digitalis, Stramonium, Squill, Tannin, Alum, Nitrate of Silver, Sulphate of Zinc, Chloroform, Acetic Acid, and Sulphurous Acid. I extend and combine this list of agents as seems to me desirable. Each drug has of course its special properties, and it would open too large a discussion to enter, however shortly, upon their consideration. I might say much to show why I have reason to be satisfied with the results I obtain from time to time; but I think it sufficient to indicate the fact that I am so satisfied, and that I believe that the inhalation of medicated vapours is likely to be a more familiar and a more important therapeutic agent in the hands of the physician in time to come. Those who are inclined to pursue this subject, will find ample details of the history and full directions for, and illustrations of, treatment by medicinal inhalations, in the work of Dr. Beigel of London—an admirable work in my opinion, and showing in its author the posses-

* Mr. J. C. Stuart, manufacturing chemist, Dundas-hill, Glasgow.

† See "Certain Moral Aspects of Money Getting," p. 23.

‡ Mr. P. Harrower, 136, Cowcaddens.

§ The instrument, price 5s., is now sold by the three parties I have named, and by other chemists and druggists.

* Mr. D. P. Walker, 125, New City-road.

sion of sound common sense and professional ability. At the last moment, it has occurred to me that it might give point to the object of my communication, and open an easy inlet to the observations of the members, if, before concluding, I should make special reference to one agent, with the name and alleged miraculous virtues of which the public of Glasgow has been made very familiar during the last few months. I need scarce say that I allude to sulphurous acid gas, or, as it has been termed in the popular opisthes through which it has gained notoriety, "the Great Sulphur Cure." The statements in Dr. Dewar's original pamphlet regarding the value of sulphur as a great remedial agent, seemed to me at the time sufficiently moderate and circumstantial to warrant a candid examination; and during the last twelve months, and of course long before the recent excitement, I have given to it a fair trial in a spirit of patient observation. I may at once say that I have satisfied myself that it has its uses—that it is not an innocuous agent—one to be pooh-poohed and laid aside without trial, or to be contemptuously stifled in a cloud of "chaff," scattered over the columns of a newspaper. But, to qualify this allusion, I admit that it is very difficult to be amazed and yet temperate when reading the loose statements, crude deductions, and far from satisfactory cases recently published by Dr. Dewar; or, to refrain from disparaging the rhapsodical style of his enthusiastic follower, Dr. Pairman.* Yet a medical man, having in recollection the history of medicine and of popular credulity, as the latter is manifested upon the occasion of every new appeal that is made to its faith in nostrums and universal cures, should ever bear in mind that a question of science, or of facts in medicine, is not to be discussed in an arena and before a jury that in all time has pronounced, as if by intuition and in popular acclaim, a favourable deliverance upon every kind of wonderful "cure" that successively crops up—ranging from Sulphur through Cold Water, Hot Water, Turkish Baths, Mineral Baths, Homœopathy, Mesmerism, St. John Long's Liniment, or Perkin's Metallic Tractors. Neither truth nor professional credit is advanced by such discussion, and we would do well to imitate the example of lawyers, who are never drawn into newspaper columns to wrangle over questions of law. Passing from this digressive comment, and returning to Drs. Dewar and Pairman, I am well satisfied that they are both sincere men; and, believing as I do, that they have made their statements in perfectly good faith, and alleged, as matters of fact, occurrences that are open to daily and familiar experiment and observation. I think it preferable to sift these statements before troubling myself about misty theories, or rather hypothetical conjectures, or in denouncing pretensions however apparently absurd. If these gentlemen are competent observers, and of sound judgment, then the occurrences they have recorded must have been repeated under like circumstances; and this recurrence of powerful and novel effects has no doubt been observed, and will be corroborated by the testimony of medical men whose position as competent observers is established. We have such observers among us this evening, and I hope they will express such a judgment as their experience warrants them in giving. As regards myself, I repeat that I have observed with patience and without prejudice, and as a result of my observations I felt warranted, at the commencement of the great sulphur mania—for it deserves no other name—in expressing my opinion that the agent was useful; and that Dr. Dewar deserved great credit for his earnest and persevering efforts in directing the attention of the profession to several novel and useful applications of the remedy; but that it was most preposterously over-lauded, that its excessive popularity would have a short day, and that some injury and many grievous disappointments would remain *en souvenir*. My experience of the remedy, in some of its principal applications to medicine in the way of inhalation, and without any reference to surgical ailments, may be shortly stated. Individuals whose general health was good, and who have resorted to the sulphur inhalations on account of such slight forms of catarrh as usually receive little or no medical treatment, except it may be a sweating powder,

or 'a warm bath, have been the most liberal in their acknowledgments of benefit. It did really seem to me that some cases were relieved or shortened in their progress by the treatment. In acute bronchitis, I have seen a copious secretion of serous or watery fluid cast off from the air passages at an unusually early stage of the disease, and this effect was evidently induced by the inhalations, and was followed by marked relief. In chronic coughs it has frequently acted powerfully in exciting forcibly expiration, and in inducing a more copious expectoration. From these results I am of opinion that in catarrh, acute bronchitis, and chronic coughs, the remedy stimulates the minute exhaling vessels, the bronchial surface seems to be both sweated and purged, and the tough, viscid phlegm which collects in the bronchi is dislodged more freely and effectively, than occurs under the use of ordinary expectorants administered in the usual way. But I have found no notable difference or any advantage in use in the sulphurous acid over common vinegar or solution of chlorine administered by inhalation in like cases. In a few opportunities I have tried it in asthma, but have not found that the inhalations were tolerated or continued, partly on account of marked distress which they occasioned, and partly because no evident relief was obtained during the paroxysms. In phthisis its effect seems to be altogether that of a tropical expectorant, but I have not seen any decided lessening of the amount of expectoration. Cases of inflammatory sore throat have not been benefited, but in the hoarseness following the acute stage of a cold, I have seen improvement and relief. I have not seen, in any of its applications, the alleged "sedative" or "calmative" action of the remedy. Troublesome and even alarming consequences are of occasional occurrence after prolonged inhalations of the dry sulphur fumes, or of the aqueous solution of sulphurous acid gas in its full strength—such as great tumefaction of the tonsils and pendulous palate, husky voice—difficulty in swallowing—pain in larynx, spitting of blood, etc.; and I have seen all these effects occur under circumstances where no blame could be justly imputed on the score of carelessness. It is not, therefore, a remedy to be administered indiscriminately or without precaution, and I deprecate the practice of fumigating a patient's room by throwing a quantity (no limit as to quantity) over a heated shovel or live coal, and filling an apartment (which may be large or small, well ventilated or otherwise) with the dry fumes of an indefinite quantity of sulphurous acid gas—an agent of known powerful chemical properties, and alleged to possess very potent influence upon the living organism. As well tell a patient to take "a large dash of laudanum" in his gruel when going to bed, or "a good pinch of calomel" occasionally. My remarks on the sulphur cure have gone to a greater length than I anticipated, and I will now only add that I have not seen any effects from its use that have led me to think that it has any specific action, when inhaled in any disease, or that it has any other effect than that of a local stimulant, tonic, and astringent. As such I believe it is likely to prove a useful adjuvant in the treatment of various maladies.

Homœopathy.

THE NEW HOMŒOPATHIC PHARMACOPŒIA.

THE following article, contributed to the *Monthly Homœopathic Review*, by Dr. MADDEN, concerns homœopathic chemists:—

In reply to numerous enquiries respecting the steps which have been taken towards the publication of this much-needed work, I take this opportunity of reporting progress.

On examining carefully the materials ready to hand, it was at once seen that a large amount of preliminary work was required before anything could be actually prepared for publication, and several months have been consumed in this manner. All the most essential of these enquiries, however, are now completed, and five of our leading chemists are busily occupied in preparing the specimen tinctures of all the plants used by homœopaths, while the botanical sub-committee are equally busy in collecting

* Dr. Pairman, has, however, admittedly "a method in his madness," and his statements of positive facts are, when closely examined, found to be more moderate and reasonable than is at first sight apparent,—certainly much more so than those of Dr. Dewar.

the necessary information respecting the plants themselves. One of the greatest difficulties we have had to encounter has been the identification of the exact species of plants referred to in many instances, and the determining of the most trustworthy sources from whence they may be obtained, and we feel that in this direction will be the greatest delay in the publishing of the work.

It has been objected by several that, if we alter Hahnemann's preparations in any way, we shall nullify the value of the provings, as we shall have no means of knowing whether the new methods of preparing the plant may not modify its action. We think it well, therefore, to explain this point pretty fully.

1st. We have no intention whatever to change any of those processes suggested by Hahnemann when the product is at all peculiar or complex—as, for example, in such cases as *calcareo carbonica*, the two *carbo's*, *mercurius solubilis*, *hepar sulphuris*, and the like.

2nd. In the case of tinctures of plants, we have no hesitation about modifying the original process whenever a better is known, since Hahnemann in no instance limited his record of symptoms to those produced by his own preparations, but enriched it by all those he could find among the writings of other experimentalists: and hence *his provings contain symptoms produced by various and differing preparations*, and we have no means of tracing each symptom to the special preparation which produced it.

3rd. We consider the objection void, seeing that few, if any, of our practitioners do even now really use Hahnemann's preparations—for the best possible reason, viz., that they are not to be had. It must not be forgotten that the necessity for a new Pharmacopœia was urged upon the ground that the chemists, having no fixed and authoritative guide to follow, had each used their own discretion in preparing the tinctures, and that accordingly great and important differences existed among the methods adopted. What, therefore, we are attempting to accomplish is, the supplying the chemists with rules by following which they can make the *best possible tinctures of every medicinal plant*.

4th. In those instances where we have thought it advisable to diverge materially from Hahnemann's rules, we purpose recommending the chemists to keep both preparations—the old and the new—until such time as experience shall have decided in favour of the one or the other.

To convey a correct idea of what the committee consider a first-rate preparation, I may mention that the chemists' attention was directed to the following points, and the processes decided upon are those which approach most nearly to the ideal standard.

It was required that—

1. Every tincture should contain all the ingredients which either water or alcohol would dissolve.
2. All tinctures should be of an uniform strength.
3. Tinctures are to be made both from the dried and the fresh plant, whenever the latter can be procured.
4. Triturations are to be made whenever alcohol and water do not completely exhaust the plants of all active materials.

It will at once be seen that the committee intend erring on the safe side, and directing more preparations than will ultimately be found necessary. They feel, however, that in this way only can they secure all the advantages of a good Pharmacopœia without the prolonged delay which would be entailed should the merits of each preparation be decided before its admission. The especial requirements of Homœopathic Pharmacopœia are such that it would be impossible to meet them all at first; and hence the committee look forward to a judicious weeding, which will become possible after a few years.

On examining carefully all the lists of the substances used in homœopathy, the committee found that a large number are included concerning which very little is known, and of which very fragmentary provings exist. They have decided, therefore, to transfer all those scarcely-known drugs to an appendix, and not to burden the work with full particulars respecting the best methods of preparing substances which may not be used for many years to come. They will, however, point out when possible the preparation used in each case by the authors upon whose recommendation the drugs have been admitted into the lists.

The British Homœopathic Society have resolved to make and preserve a collection of all the substances and preparations of the Pharmacopœia, for the purpose of constituting a Museum of Reference. H. R. MADDEN, M.D., Convener.

Dentistry.

NITROUS OXIDE AS AN ANÆSTHETIC.

AS the remarkable anæsthetic effects of nitrous oxide gas are still attracting much attention in this country, we extract from an article in the *British Medical Journal* the following particulars respecting the use of this agent in America:—

"In a work entitled *An Inquiry into the Origin of Modern Anæsthesia*, by the Hon. Truman Smith (Hartford, U.S. Brown and Gross, 1867) we find particulars of the extent to which the protoxide of nitrogen has been and is being used as an anæsthetic in America. The honour of distinctly ascertaining the anæsthetic effects of nitrous oxide gas, which had been suggested by Sir Humphrey Davy, is justly attributed to Dr. Horace Wells, who, after attending a lecture by Mr. Colton on the subject in Hartford on the evening of December 10th, 1844, inhaled it with a view to anæsthesia next day, and had a tooth successfully extracted while under its influence, by Dr. Riggs, a dentist. The premature death of Wells, the great convenience, presumed safety, and sustained effects of ether inhalations, gave immediate preference to ether, and subsequently, especially, in this country, to chloroform. Mr. Colton, being neither a dentist nor a surgeon, went on lecturing on nitrous oxide gas, without developing further [its anæsthetic effects, until, in June 1863, when lecturing in New Haven, Connecticut, and exhibiting the nitrous oxide as usual, Dr. Joseph H. Smith, a highly respectable dentist, happened to have a lady patient in a very delicate state of health, to whom he was unwilling to administer the vapour of ether. He applied to Mr. Colton for information in respect to the availability of the nitrous oxide; and, his response being favourable, he engaged him to administer the gas, which he did accordingly; and Dr. Smith extracted seven teeth while she was under its influence, and apparently insensible to pain. In a deposition, made in March 1864, Dr. Smith gives a schedule with names of parties, dates, and number of teeth extracted during the following nine months. The aggregate is not less than 3,929 teeth; the result of the use of the gas having been to attract a great mass of patients. Dr. Smith, in the deposition (which was made *à propos* of congressional claims in respect to first discovery of anæsthesia by Morton), says that 'in no single instance has the administration of the gas been attended with any ill effects; that, in most of the cases, no pain whatever was experienced; and, in the residue, it was too inconsiderable to be noticed. My patients uniformly express much satisfaction with its effects; and I am convinced that, properly made and administered, it is a perfectly safe agent, and I greatly prefer it to the vapour of ether. Indeed, with my present experience, I would not use ether so long as I can obtain the gas.'

"This success prompted to the employment of the gas by others; and, in July 1863, Mr. Colton removed to New York; and there, not being himself a dentist, established 'an anæsthetic institution' for the extraction of teeth by the use of the gas; his principal associate being Dr. John Allen, a dentist of the city. The practice has spread very widely indeed throughout the city of New York. At this institution, after the first six months, on the suggestion of the Hon. Truman Smith, a register was kept of the cases. Each patient was asked to subscribe his or her name; and to this is added the date and number of teeth extracted. The whole number of names which appear on this register up to the 1st day of January, 1867, is 17,601; the teeth extracted for each individual numbering two and a fraction. It is affirmed that, in a registered experience at this institution and its branches of 25,000, the results are entirely satisfactory. From New York, says Mr. Truman Smith, the practice has extended into the other large cities, Boston, Philadelphia, and Baltimore; and is now rapidly spreading all over the country. Dentists using the nitrous oxide can at present be counted by hundreds, and in a few months 'their name will be legion.'"

Photography.

PRESERVING COLLODIONISED PLATES IN A MOIST CONDITION.*

GENERAL MONGIN recently read, before the French Photographic Society, a paper on preserving collodionised plates in a moist condition for at least as long a period as ten days. The General uses collodion iodised and bromised with cadmium salts only, and a bath prepared with re-crystallised nitrate of silver, which has never been used with any other collodion. After sensitising, the plates are carefully washed, first, back and front, under a small jet of water from a wash-bottle, and then in two or three baths of pure water, remaining a few minutes in each. These plates are then put into a grooved box, full of water, with due care not to injure the edges of the collodion. The water must be renewed for every twelve or fifteen plates. In this box the plates are conveyed to the scene of operation. The exposure is about three or four times that required for ordinary wet plates, and they are rarely over-exposed. The development—which must be done on the same evening or following morning—is conducted with two solutions.

No. 1.

No. 2.

Nitrate of silver	4 grammes	Pyrogallie acid,	51 grms.
Citric acid	4 „	Alcohol	100 cub. ents.
Water	100 cub. ents.		

The acid is dissolved in the alcohol, and the solution filtered. These mixtures will keep good for a long period.

A bath of pyrogallie acid is prepared from No. 2 solution. Ten cub. ents. of the latter, and a like quantity of acetic acid, are added to 200 or 250 cub. ents. of water, and well shaken. It will keep good a fortnight or three weeks.

Two small glass vessels are taken; into one of them (which we will designate No. 1) are poured a few drops of the No. 1 solution. The other vessel (No. 2) is then filled with liquid from the pyrogallie acid bath, a proportion of the latter being afterwards transferred to No. 1 vessel. The negative is carefully, and with clean hands, withdrawn from the box, and covered with the pyrogallie acid solution contained in No. 2 vessel. Subsequently the liquid in No. 1 vessel is applied, and the development proceeded with in the ordinary manner.

The image is sometimes three or four minutes before it becomes visible, but when once apparent, it develops with great regularity. When the operation has been carried sufficiently far, the plate is carefully washed by means of a wash-bottle, and fixed with cyanide of potassium. The subsequent manipulations require no special description, and are carried out in the ordinary manner.

Corner for Students.

The chemical formulæ employed in this section are based upon the new system of atomic weights, unless the use of the older system is specially indicated. In the *British Pharmacopœia* the symbols corresponding to those adopted here are printed in heavy Clarendon type.

PRIZES.

We have decided to offer every month a standard Scientific Book, or something equally appropriate, as a Prize to be competed for by assiduous students. In estimating the relative deserts of our correspondents, we shall consider the methods of calculation adopted as well as the results obtained, hence the papers forwarded to us should always give full solutions of the questions proposed. We shall make due allowances for the different positions of our correspondents, and therefore request them to communicate, confidentially, such particulars respecting age, qualification, and occupation as may enable us to distribute the prizes fairly.

The Prize to be awarded this month is the important work recently published by Mr. Van Voorst, entitled,

A Manual of Inorganic Chemistry, arranged to facilitate the Experimental Demonstration of the Facts and Principles of the Science. By CHARLES W. ELIOT and FRANK H. STORER.

* From the *Illustrated Photographer* June 12.

In our February number we described this volume as “the best manual of chemistry that has been offered to the student since the publication of Fownes’s classical work,” and we are quite sure that he who wins it will admit that we have shown, in selecting it as a prize, a proper appreciation of the wants of an earnest student. In case the successful competitor should already possess the book chosen by us, we shall be happy to substitute for it any other work of equal value.

QUESTIONS.

ACIDUM PHOSPHORICUM DILUTUM, B.P.—Represent with modern symbols the reaction by which phosphoric acid, H_3PO_4 , is produced in the prescribed process; and prove that the theoretical yield of H_3PO_4 is indicated with adequate precision by the result of the quantitative test.

PLUMBI IODIDUM, B.P.—Express symbolically the reaction involved in the official process, and calculate the weight of the product.

PILULA HYDRARGYRI, B.P.—What is the weight of the mercury contained in 5 grains of freshly prepared mercurial pill?

WEIGHTS AND MEASURES.—1. Given a rectangular tank eight feet long, six feet wide and four feet deep, internal measurement, what is the difference in pounds between its weight when empty and its weight when filled with water? [A cubic foot corresponds to 6.2355 gallons.]

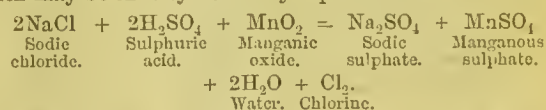
2. Express in millimetres the height of a column of mercury read as 30 inches on the ordinary barometrical scale; and express in inches, with decimals, the height of 729 millimetres. [The B.P. tables of weights and measures furnish the necessary data.]

SPECIFIC GRAVITY.—1. A piece of dense wood, weighing 600 grains in air, is attached to a copper sinker, which weighs 2047 grains in air, and 1817 grains when immersed in water. The weight of wood and sinker combined, in water, is 2020 grains. Find the sp. gr. of the wood.

2. A glass ball lost 30 grains when weighed in water and 28.14 grains when weighed in a sample of diluted alcohol. What was the sp. gr. of the diluted alcohol?

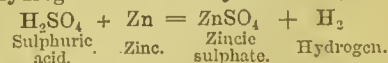
3. Two bottles of equal weight, one containing four fluid ounces of the official nitric acid, and the other five fluid ounces of the official proof spirit, are placed in the opposite pans of a balance. What weight, in grains, must be added to the lighter pan to equilibrate the balance?

PRODUCTION OF CHLORINE GAS.—Chlorine is frequently obtained by heating a mixture of common salt, sulphuric acid, and black oxide of manganese. The whole of the chlorine present in the salt is liberated by the reaction, which may be thus symbolically represented:



Find the weight of salt, in grammes, required for the production of 10 litres of chlorine at the standard temperature and pressure. [See Data next page.]

PRODUCTION OF HYDROGEN GAS.—Hydrogen gas is usually prepared by the action of metallic zinc on sulphuric acid diluted with water. The reaction consists in the displacement of the hydrogen of the acid by the metal, thus:



Calculate the weights of sulphuric acid and zinc in grammes required for the production of 20 gallons of hydrogen at the standard temperature and pressure. [See Data next page, and B.P. tables of weights and measures.]

SYNTHESIS OF WATER.—When a mixture of hydrogen and oxygen is exploded by an electric spark water is produced, the two gases combining in the proportion of two parts, by weight, of hydrogen to sixteen parts, by weight, of oxygen, in accordance with the symbolic equation, $H_2 + O = H_2O$. Now, suppose six litres of hydrogen and ten litres of oxygen, at the standard pressure and temperature, be mixed and exploded. What is the weight, in grammes, of the water produced, and what is the weight of the residual oxygen? [See Data next page.]

DATA.

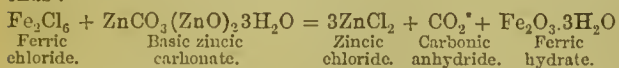
STANDARD VOLUME USED IN CALCULATIONS RELATING TO GASES.—When the weight of a given volume of gas is required, or conversely when the volume of a given weight has to be determined, the "absolute volume" proposed by Professor Williamson may be advantageously adopted as the basis of calculation. This absolute volume is 11.19 litres, or the bulk of one gramme of hydrogen measured at the standard temperature and pressure. As the densities of the elementary gases are expressed by their atomic weights, the volume of 11.19 litres represents the bulk of that quantity of a gas which weighs as many grammes as there are units in the number denoting its atomic weight. Thus, at the standard temperature and pressure

Grammes.	Litres.
1 Hydrogen	= 11.19
35.5 Chlorine	= 11.19
16 Oxygen	= 11.19
1.4 Nitrogen	= 11.19

If students will learn to associate this volume of 11.19 litres with the atomic weights they will have no difficulty in determining the actual volume of any given weight of a gaseous element. The standard of temperature adopted when gases are compared is 0°C. (32° Fahr.). The standard of barometric pressure is 760 millimetres (29.9 inches).

ANSWERS.

LIQUOR ZINCI CHLORIDI, B.P. (May, p. 283).—The solution of chlorine and the zincic carbonate are employed to precipitate iron and other foreign metals derived from the impure zinc of commerce. The iron, when dissolved in hydrochloric acid, exists as ferrous chloride, FeCl_2 , and by the action of free chlorine this is converted into ferric chloride, Fe_2Cl_6 , which reacts with the zincic carbonate, thus:—



The products of the reaction are zincic chloride, which remains in solution; carbonic anhydride, which escapes as a gas; and ferric hydrate, or hydrated sesquioxide of iron, which constitutes the brown sediment. If lead be an impurity of the zinc employed it is precipitated by the same treatment.

R. S. Crosby, Grantham; H. G. H.; R. Moss, Dublin; W. Parsons, Birkenhead; T. S. Sanders, Salford; F. Young, Leicester; G. Welborn, Grantham.

PERCENTAGE COMPOSITION OF THE SUGARS (May, p. 283).—The formula of cane sugar (*Saccharum purificatum*, B.P.) is $\text{C}_{12}\text{H}_{22}\text{O}_{11}$, while that of milk sugar (*Saccharum Lactis*, B.P.) is $\text{C}_{12}\text{H}_{22}\text{O}_{12}$. From these formulæ the following percentages are deduced:—

		Cane Sugar.	Milk Sugar.
Carbon	...	42.105	40.000
Hydrogen	...	6.433	6.667
Oxygen	...	51.462	53.333
		100.000	100.000

F. Barrett, Newark-on-Trent; R. S. Crosby; J. D., Pembroke; J. Gregory, Stockton-on-Tees; H. H. G.; H. Habgood, Wells; R. Moss; G. P.; T. S. Sanders; J. Watts, Attercliffe; G. Welborn; W. X. Y., Cupar.

CALCIS HYDRAS, B.P. (May, p. 283).—The process consists in the conversion of $\text{CaO} = 56$ into $\text{CaH}_2\text{O}_2 = 74$, and as 2 pounds or 14,000 grains of the former compound are taken, the theoretical yield is found by the proportion

$$56 : 74 :: 14,000 : x; \therefore x = 18,500 \text{ grains.}$$

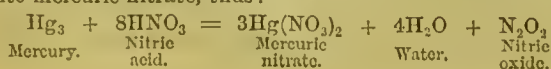
R. S. Crosby; J. Gregory; R. Moss; G. P.; T. S. Sanders; J. Watts; G. Welborn; J. Young.

POTASSÆ PRUSSIÆ FLAVA, B.P. (May, p. 283).—The formula of this salt ($\text{K}_4\text{FeC}_6\text{N}_6 \cdot 3\text{H}_2\text{O}$) corresponds to the weight 422, and the potassium contained in it (K_4) corresponds to the weight 156; hence the percentage of potassium is found by the proportion

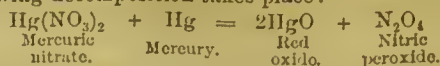
$$422 : 156 :: 100 : x; \therefore x = 36.967 \text{ per cent.}$$

F. Barrett; J. D.; J. Gregory; H. H. G.; H. Habgood; R. Moss; G. P.; T. S. Sanders; J. Watts; G. Welborn; W. X. Y.; J. Young.

HYDRARGYRI OXIDUM RUBRUM, B.P. (May, p. 283).—By the action of nitric acid half the mercury is first converted into mercuric nitrate, thus:—



The mercuric nitrate, having been dried, is triturated with the remainder of the mercury, and on heating the mixture the following decomposition takes place:—



F. Barrett; R. S. Crosby; A. Nicholls, Penzance; G. Welborn.

SPECIFIC GRAVITY (May, p. 283).—1. Weight of a gallon of Chloroform.—According to the B.P. the sp. gr. of chloroform is 1.49, and as a gallon of water (the standard of specific gravity) weighs 70,000 grains, the weight of a gallon of chloroform is readily found by the proportion

$$1.00 : 1.49 :: 70,000 : x; \therefore x = 104,300 \text{ grains.}$$

H. G. H.; H. Habgood; W. A. Higginson, Cork; R. Moss; A. Nicholls; G. P.; T. S. Sanders; J. Watts; G. Welborn; W. X. Y.; J. Young.

2. Weight of Sulphur in a gallon of the official Sulphurous Acid.—The sp. gr. of Acidum Sulphurosum, B.P. is 1.04, hence the weight of a gallon is 72,800 grains. Now according to the B.P. sulphurous acid gas, SO_2 , constitutes 9.2 per cent. of the liquid, and since SO_2 is exactly twice the weight of S, the percentage of sulphur is 4.6. The total weight of sulphur in a gallon of the liquid is therefore found by the proportion

$$100.0 : 4.6 :: 72,800 : x; \therefore x = 3348.8 \text{ grains.}$$

R. S. Crosby; J. Gregory; H. Habgood; R. Moss; A. Nicholls; T. S. Sanders; J. Watts.

3. Weight of Block of Limestone.—Since 2.64 is the sp. gr. of the stone, and 62.5 lb. the weight of 1 cubic foot of water, the weight of 1 cubic foot of limestone is found by the proportion

$$1.00 : 2.64 :: 62.5 : x; \therefore x = 165 \text{ lb.}$$

And as the block of stone contains 12 cubic feet its total weight is $165 \times 12 = 1,980 \text{ lb.}$

R. S. Crosby; J. Gregory; H. G. H.; H. Habgood; W. A. Higginson; R. Moss; A. Nicholls; G. P.; T. S. Sanders; J. Watts; G. Welborn; J. S. W.; J. Young.

4. Weight of a Litre of Benzol.—Since the sp. gr. of benzol is 0.85, and a litre represents 1,000 grammes of water, the weight of a litre of benzol is obviously 850 grammes.

J. Gregory; H. G. H.; H. Habgood; R. Moss; A. Nicholls; G. P.; J. Watts; W. X. Y.; J. Young.

TO CORRESPONDENTS.

*. All questions forwarded to us for publication in this "Corner for Students" should be accompanied by the answers which the pounders believe to be correct. As a rule, numerical results should be worked out to three decimal places. Communications should reach us at least ten days before the date of publication, and include the names and addresses of the writers.

J. S. W.—In calculating the percentage composition of the sugars you have not taken into consideration the different combining weights of C, H, and O, consequently your results are erroneous. The explanation of the production of red oxide of mercury is inadequate; and three of the answers on specific gravity are strangely incorrect. Do not be discouraged by the failure of these first attempts.

H. G. H.—You have miscalculated the theoretical yield of the official form for Calcis Hydras, and have imperfectly expressed the reaction between mercury and nitric acid in the first stage of the process of preparing the red oxide. The answer to the second question on specific gravity is incorrect, but the cancelled figures in your paper show that you had previously obtained the true result.

J. Y.—The percentages of the constituents of the sugars are not fully expressed. In the equation representing the final reaction of the process for preparing red oxide of mercury, you have disregarded the fact that the weight of the metal in the nitrate is equal to the weight of the metallic mercury added. The second answer on specific gravity is five grains out, owing to a mistake in computation. We do not agree with you with respect to your chance.

J. D.—Your remark upon the question relating to Calcis Hydras leads us to suppose that your knowledge of the B. P. form is derived from some commentary on the national work. Your answers relating to specific gravity are incorrect.

F. B.—The excess of water used in slaking the lime escapes as steam. J. G.—Your explanation of the process of preparing zincic chloride is ingenious, but not correct. Your answer to the other chemical question is also faulty.

R. M.—You have adopted the old atomic weight of mercury in your symbolic representation of the preparation of the red oxide.

T. S. S.—Nitric oxide, not hydrogen, is evolved when nitric acid and mercury react.

Mr. Thomas D'Aubney, of Shepherdess-walk, City-road, has received from the hands of his fellow-parishioners a handsome and costly silver salver as a mark of their just appreciation of his services as churchwarden. The name of Mr. D'Aubney is well-known to the readers of our journal as that of an energetic and praiseworthy member of the trade.



USEFUL PREPARATIONS OF CARBOLIC ACID.

PHENOL or carbolic acid is one of the many useful bodies obtained from coal-tar. Its composition is expressed by the modern formula C_6H_5O , and though it forms unstable compounds with certain metals such as potassium, barium, and lead, it has the character of an alcohol rather than that of an acid. It crystallises at ordinary temperatures, but the crystals deliquesce on taking up a mere trace of water. It smells like wood-tar creasote, in fact much of the creasote of commerce consists almost entirely of phenol. It does not redden litmus. Its antiseptic and disinfecting properties are very remarkable, and have led to its extensive application to useful purposes. Its aqueous solution preserves animal substances from decomposition, and will even remove the fetid odour from meat and other substances already in a state of decomposition. Fish and leaches die when immersed in the aqueous solution, and their bodies subsequently dry up on exposure to the air without decomposition. We mention these facts, for though phenol has been introduced into the *Pharmacopœia* under the name of *Acidum Carbolicum*. We have reason to believe that the nature and properties of this important compound are not generally understood.

Messrs. Mc Dougall Brothers, the well-known and manufacturing and agricultural chemists have recently extended the useful applications of phenol by the introduction of soaps containing this compound.

The **CARBOLIC ACID TOILET SOAP**, manufactured by this firm, is an article which we can strongly recommend for general domestic use, as we have found it admirably adapted for toilet purposes, for shaving, and for the sanitary operations of the nursery. The tarry smell of the phenol is covered by perfume, and the tablets of this valuable toilet soap resemble in form and colours those of the ordinary varieties of fancy soap. The soap is an excellent emollient, and a most effective detergent, cleansing the pores of the skin, and allaying irritation. Owing to its peculiar antiseptic properties, it is admirably adapted for removing the unpleasant results of excessive perspiration, and is consequently an invaluable agent for washing the feet. In warm climates this soap will doubtless be extensively used.

Mc Dougall's **PATENT CARBOLIC DISINFECTING AND SCOURING SOAP** is specially adapted for disinfecting and cleansing, and has already been adopted by the chief hospitals, asylums, and workhouses of London. Dr. Barbour, of the London Fever Hospital, considers its use in the wards most beneficial, and the patients in this establishment find the odour very refreshing. It is well suited for ordinary household purposes, and besides being an excellent cleansing material, it kills all kinds of insects, and thoroughly disinfects the atmosphere. Moreover, the soap-suds have the disinfecting properties of the soap, and are extremely useful in purifying drains and sinks.

From a firm trading under the appropriate title of **Tar and Co.**, we have received samples of some minor preparations of phenol, which may be sold by chemists and druggists. One of these is named "**GLYCEER-CARBOL**," and described as a "chilblain charmer." We conclude that it is a modification of the officinal glycerine of carbolic acid, and as many medical men have strongly recommended the application of phenol to chilblains, Messrs. Tar and Co.'s preparation deserves a fair trial. Another article labelled "**Tar's CARBOLIC TOOTH-ACHE TINCTURE**," may be safely accepted as a useful agent for relieving tooth-ache. These preparations are supplied to retailers in suitable bottles neatly labelled and capped.

WALLS, CLOSE AND CO.'S NEW FEEDING-BOTTLE.

"ANOTHER, and another, still they come." Bottle succeeds bottle, and each one is so like its predecessor, that we require a microscopic eye to detect the minute differences by which they are distinguished. The feeding bottle now

before us, has, however, certain obvious peculiarities. It is formed of milk-white enamel, and is therefore much stronger than the ordinary glass bottle, and less liable to crack when filled with hot liquid. The design of the bottle is attractive, and the material of which it is composed has a cleaner appearance than glass has when dimmed by the food in the bottle. For general use we think a transparent bottle preferable to an opaque one; but we must admit that the enamel



bottle is much prettier than one made of glass, and therefore better adapted for use on state occasions. The fittings of this new feeder are excellent, and the price of the whole apparatus, including tube brush, bottle brush, and extra teat, brings it within the reach of most mothers.

BROWN AND SON'S GRADUATED PHIALS.

We have before us some specimens of the graduated phials manufactured by Messrs. G. Brown and Sons. The scale moulded on these phials accurately indicates teaspoonfuls. For dispensing cough mixtures, children's medicines, etc. these phials may be advantageously used.



UNITED SOCIETY OF CHEMISTS AND DRUGGISTS.

EXECUTIVE COMMITTEE MEETING, JUNE 4, 1868.

Present—Mr. Henry Matthews, Past President, in the chair; Messrs. Betty, Mellin, Garner, Pass, Beere, Heppell, Buott, jun., Thomas, Anderson, and Burton.

Progress was reported with reference to instructions given at the Committee meetings held on the 24th April and 7th May last.

The **SECRETARY** informed the Committee that several communications had been received urging the Committee to postpone any special festival of the Society until the proposed Pharmacy Bill had passed the Houses of Parliament. After some discussion, the instructions given to the Secretary to make the arrangements for holding the festival were withdrawn, and it was agreed that a dinner should be held on Wednesday, the 1st July next, at which the Committee would be glad to see any member or friend of the Society, and that the more special gathering of the members should be celebrated at a future date, in compliance with the suggestions received.

A sub-committee was appointed to carry the above into effect, and it was agreed that the tickets for the dinner should be fixed at 7s. 6d. each, and all applications for same should be made to the Secretary, at the offices of the Society.

The balance-sheet of the yearly expenditure and receipts, and other accounts of the Society, were read over, and adopted by the Committee, their correctness having been duly certified by the auditors.

It was resolved that the annual meeting of the members of the Society should be held on 1st of July next, at half-past two o'clock in the afternoon, at the offices of the Society.

In answer to applications received, two grants were made from the Benevolent Fund.

In reference to the happy circumstance of the Pharmacy Bill having passed the second reading in the House of Lords, it was resolved—

“That the Executive Committee, being in accordance with their own persistent efforts to consummate the policy of the United Society, and most anxious to secure the success of the Pharmacy Bill now before Parliament, earnestly and cordially tender their assistance to the Council of the Pharmaceutical Society in forwarding petitions, forming deputations, and taking all necessary steps to give reality to the aims, and to crown the wishes of the two Societies.”

A cordial vote of thanks to the Chairman for his able conduct in the chair during a protracted sitting closed the proceedings of the meeting.

TRADE FESTIVALS.

On Friday, 29th ult., the *employés* of Messrs. Hewlett and Co., wholesale druggists, Cree Church-lane, dined at Kenan's Hotel, Cheapside, to celebrate the majority of Mr. J. C. Hewlett, son of the senior partner. The chair was taken by Mr. Colston, and the vice-chair by Mr. Douglas. The “Health of Mr. J. C. Hewlett” was feelingly given by the Chairman, and heartily responded to by the company; this was followed by the “Health of the Senior Partner,” and the “Ladies,” and suitably acknowledged. The evening was enlivened by several songs.

The annual pic-nic dinner given by Messrs. S. Maw and Son to their *employés* took place on Whit Monday, when the party, numbering over 120, proceeded by railway to West Humble Station, thence to Box-hill, where they were met by Mr. Charles Maw, and partook of some refreshments he had there provided. Having enjoyed for a short time the scenery for which the place is noted, they proceeded, accompanied by Mr. Maw, to his residence at Dorking, where, in a marquee, a very excellent repast was furnished by the Albion (Aldersgate-street). The chair was taken by the host, who was accompanied by Mrs. Maw and a few friends, among whom was the Rev. W. H. Joyce, Vicar, and the Rev. Mr. Chadwick. After the loyal toasts, Mr. Thompson, the manager, proposed the “Health of the worthy Host and Hostess,” and read an address that had been prepared for presentation by the *employés*, and which was beautifully engrossed on vellum by one of their number; in responding to which the chairman remarked that he heartily thanked them for it, and reciprocated the feelings expressed in their address. The Rev. Mr. Chadwick made some very appropriate remarks on the manifestation of mutual goodwill existing between employer and employed, and expressed the hope that such feelings would become more general. Sports, in the way of high jumping, handicap and hurdle races, cricket, foot-ball, &c., were provided; after which the party assembled to tea, when numerous prizes were distributed by Mrs. Maw to the fortunate winners. The proceedings were concluded by the singing of the National Anthem, and the party returned to town.

LAW AND POLICE.

CAN THE ATTENDANCE OF UNQUALIFIED MEDICAL ASSISTANTS BE CHARGED FOR?

A CASE of rather an important character to medical men came on for hearing at the Liverpool County Court, on the 12th ult. The plaintiff was Mr. George Johnstone, surgeon, of Russell-street, Liverpool, and he claimed from the defendant, Mr. Thomas Dawson, of Kensington, the sum of 6s., for services rendered. From plaintiff's statement, it appeared that Mr. Dawson some time since sent for him to attend his child; but being from home, plaintiff's brother, who was his assistant, went instead. Defendant denied ever having accepted the services of the assistant. Plaintiff admitted that at the time in question his assistant was not a properly qualified medical man. His Honour: The employment of a medical man is a matter of personal confidence, as a person might have confidence in you and not in your assistant. In addition, your assistant was not a legally qualified medical man.—Plaintiff: But I charge for Dr. Fisher.—Defendant: Dr. Fisher was not sent by our consent.

—His Honour: It is a very grave question indeed, this sending of another medical man. If I send for Dr. A, I am not bound to accept the services of Dr. B, who is sent as his representative. If Dr. A is a properly qualified medical man, and he sends a person who is not properly qualified, certainly I am not bound to accept him. The defendant stated that the person who attended on behalf of Mr. Johnstone gave the child medicine which threw it into convulsions, and it died in convulsions. His Honour: Did you consent to receive Dr. Fisher? Defendant: No, Sir. We did not know anything about him. The child died on the Sunday night. The unqualified man visited the child on Saturday.—His Honour: I am not sure, Mr. Johnstone, if you are entitled to charge for Dr. Fisher in your name.—Plaintiff: A great many of the medical men in Liverpool keep assistants who have no diploma; they charge for their services.—His Honour: I do not care what they charge. Plaintiff: It has been decided.—His Honour: No, it has not been decided. They charge for *qualified* medical men, but that is not the question. Ultimately, His Honour held that a deputy who was not a qualified person could not be charged for; and as it appeared to him that Dr. Fisher was called in by the plaintiff's brother, rather for his own satisfaction than at the instance of the defendant, he did not consider the plaintiff was entitled to a verdict. The plaintiff's brother might, for anything he knew, be a very clever young man; but what he meant, was, that he was not legally qualified. He must, therefore, direct the plaintiff to be nonsuited.

BANKRUPTCY.

GEORGE THOMAS SLACK, SHEFFIELD, DRUGGIST.

An adjourned sitting for last examination and discharge of this bankrupt was held at Sheffield on the 20th ult. before Mr. Commissioner Ayton. Mr. Chambers, who appeared for the bankrupt, explained to his Honour that the adjournment had taken place in consequence of the non-payment of fees, bankrupt had now complied with all the requirements. No opposition being offered, bankrupt passed his last examination and received his order of discharge.

T. T. HOLMES, HANLEY, CHEMIST.

A meeting for last examination and discharge of this bankrupt was held before Mr. Commissioner Hill, at Birmingham, on the 18th ult. Mr. Hodgson appeared for the trade assignee, and Mr. Rowlands for bankrupt. The balance sheet showed—liabilities, £1,107 4s. 7d.; assets, £369 0s. 2d.; deficiency, £738 4s. 5d. Mr. Hodgson applied for cash and purchase and sales accounts, which were ordered to be filed, and the meeting adjourned to the 26th of June.

J. E. WOODS, LATE OF CROSCOMBE, CHEMICAL MANUFACTURER.

In the Bristol Bankruptcy Court, on the 9th inst., before Mr. Commissioner Hill, Mr. E. E. Salmon (from the office of Mr. Henderson) informed the Court that the case had been taken out of Court under the 135th Section, and he applied on the part of the assignees that an adjournment might take place till the 27th of September to enable the deed to be carried out.

ACCIDENTS.

TWO CHILDREN POISONED BY ARSENIC.

A SAD case of poisoning by arsenic has occurred at Taddington, near Bakewell, Derbyshire. It appears that on the morning of the 12th ult. two children named James and Hannah Holmes, aged ten and eight years respectively, whilst looking for a toy, found in an old box a paper containing a white powder, and supposing this to be cream of tartar, they put a teaspoonful in some water, and drank the mixture between them. Shortly afterwards they became sick, and the boy told his mother what he had done, and gave her the paper, which, on being examined, was found to be labelled “Arsenic—Poison.” Dr. Park, of Tideswell, having been sent for, applied the usual remedies, with success as regarded the boy, but the girl died the same night. At the inquest held on the body of the child, the boy made a statement similar to the facts recorded above.

Both parents declared that they were not aware that such a thing as arsenic was in the house, and that the box in which it was found had not been disturbed for years. The verdict of the jury was "That the deceased died from collapse, from taking a dose of arsenic in mistake for cream of tartar."

MERCURIAL POISONING BY ABSORPTION.

On the 29th ult. an inquest was held at Lichfield, by Mr. Coroner Morgan, upon the body of William Thomas Petty, aged eight years, the son of a farmer, of Muckley Corner. According to the evidence the deceased had caught the itch, and had been sent with a servant to Mr. Williams, chemist, of Lichfield. Mr. Williams gave the servant a lotion in a bottle labelled "poison," with directions that it should be applied all over the child's body with a sponge. The symptoms induced by the application of the lotion were so alarming that Mrs. Petty sent for Mr. M. B. Morgan, surgeon, who found that the child was salivated. He administered remedies, and up to Sunday night thought there was an improvement in the child's condition. He was hastily summoned on Monday evening, but found that the child was dead. The cause of death was exhaustion, produced by salivation, and in Mr. Morgan's opinion the salivation was caused by the absorption of mercury. Mercury in a mild form was, he said, not an unusual remedy for the itch. Mr. Williams, chemist, who was cautioned before being sworn, said he supplied written directions with the lotion, but the girl stated that the directions were only given verbally. Mr. Williams also stated that he had used a similar lotion for many years in hundreds of cases, and he had never before heard of absorption producing salivation. The jury, after deliberating for about half an hour, returned a verdict to the effect that the deceased died from exhaustion from salivation consequent upon the absorption of mercury into the system, and added that, while they considered this to be an exceptionable case, they thought Mr. Williams was to blame for not sending more definite instructions with the lotion.

GOSSIP.

The sum of £437 12s. 2d. has been received at Bristol as duty on foreign plain spirits for the month ending May 31st.

A nitro-glycerine manufactory exploded at Stockholm on the 11th inst. Fifteen persons were killed, and great destruction was caused.

Dr. Fisher, a gentleman residing between Port Erin and Port St. Mary, in the Isle of Man, committed suicide on the 4th inst., by swallowing upwards of an ounce and half of tincture of opium.

The cost of drugs and appliances to the Birmingham and Midland Eye Hospital had been 11½d per patient during the year as compared with 1s. 0½d. during the preceding twelve months.

Dr. Warren De La Rue, F.R.S., President of the Chemical Society, has retired from business. For nearly thirty years he has been a member of the firm of Messrs. Thomas De La Rue and Co.

From the Tenth Annual Report of the Birmingham Dental Dispensary, read at a meeting held on the 5th inst., it appeared that during the past twelve months, 2,783 patients had been under treatment at the institution, and 2,946 operations of various kinds performed, making up to the present time a total of 21,791 patients relieved, and 25,456 operations performed since the opening of the dispensary.

EXPENSE OF ELECTION OF HONORARY MEDICAL OFFICERS.—At a meeting of the quarterly board of the Birmingham General Hospital, held on the 5th inst., a report was presented from a committee appointed to consider the propriety of altering the laws with reference to the election of honorary physicians. The committee had been permitted to examine the accounts of a recent successful candidate at the Birmingham General Hospital, and it appears that his expenses amounted to £689, and the sum would have been considerably larger had there been a poll.

GAZETTE.

PARTNERSHIPS DISSOLVED.

BANNISTER, POTTS, and Co., Exhall, Warwick, bone manure manufacturers; so far as regards Ralph Potts.
CAMPION and REEVE, Banbury, druggists.
CLUTTERBUCK and EDWARDS, Bristol, drysaltors.
DUNCAN and CORVER, Southwick, near Brighton, animal substance preservers.
ELIAS and BOLBY, Liverpool, chemists.
HARRIS and SANDERS, Merton, surgeons.
MEADOWS and MEADOWS, Rainhill, manufacturing chemists.

BANKRUPTCY ANNULLED.

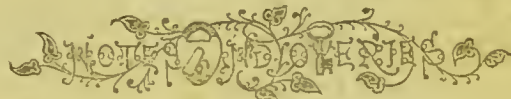
HOLDEN, WILLIAM, St. Helens, manufacturing chemist.

BANKRUPTS.

ADAMSON, ROBERT, Wath, surgeon.
ANDERSON, ANDREW, Goodge-street, Tottenham-court-road, chemist.
COBB, WILLIAM, Abgoll-lane, Stratford, cork-cutter.
IVES, SAMUEL, Hydo, brush manufacturer.
PARK, ROBERT, Lambeth-walk, chemist.
PARRY, PETER, jun., Leeswood, surgeon's assistant.
PROUT, JAMES, Gracechurch-street, perfumer.
SANDFORD, ALFRED, Blackburn, surgeon's assistant.
SCOTT, JOHN, Berwick-street, Oxford-street, licentiate of medicine.
SEXTON, GEORGE, Glenarm-road, Lower Clapton, doctor of medicine.
STRONG, HENRY EDWARD, Rochester, dealer in artificial manure.
TEAGLE, JOSEPH PERKINS, and MARTIN, EDWIN, Artillery-street, Bermondsey, glass bottle manufacturers.

DECLARATIONS OF DIVIDENDS.

LATHAM, R. G., New Maldon, Kingston-on-Thames, doctor of medicine, ss. 1d.
STANGER, G. E., Nottingham, surgeon, 1s. 5d.
WHEATCROFT, J., Stoke-upon-Trent, surgeon, 1s. 1½d.



B. F. N. (Bow).—The *Pyrethrum roseum*, or red-flowered pyrethrum, is, we believe, a native of the Caucasus. It forms the true Persian Insect Powder which is extensively used on the Continent for destroying vermin.

S. M.—Church's *Laboratory Guide for Students of Agricultural Chemistry*, published by Van Voorst, of Paternoster-row, affords much information on the Analysis of Manures.

BOOKS RECEIVED.—Royle and Headland's *Manual of Materia Medica and Therapeutics*. Fifth edition. Churchill. 12s. 6d.

—Dr. Garrod's *Materia Medica and Therapeutics*. New edition. James Walton. 12s. 6d. —*Supplement to S. Maw and Son's Catalogue*. These works will be reviewed in our next.



CHEMICALS.

The chemical market has been quiet since the date of our last report, and, as a matter of course, little business was transacted during the holidays. In the prices of rough chemicals, there are few noteworthy alterations. SODA CRYSTALS are nominally quoted at 92s. 6d., but there is no improvement in the demand. BICARBONATE is offered at 12s. 6d. to 12s. 9d., but buyers are scarce. BORAX, refined, is nominally quoted at 50s. to 55s., but is obtained with difficulty for present delivery. CREAM OF TARTAR is scarce, and holders now demand 84s. to 85s. BLEACHING POWDER is dull, and 12s. per cwt. is accepted.

The prices of Acids have again advanced. CITRIC has lately been very scarce, but it is now offered more freely at 2s. 8d. for present delivery. For TARTARIC, 1s. 3d. is generally demanded by manufacturers. OXALIC is quiet, at 8½d. to 8½d.

Messrs. William Cook, jun., and Co., in their Circular for June 8, state that crystals of soda for immediate delivery can be obtained at £4 net per ton gross weight. They quote the following prices, which are subject to the usual discount, free on board in the Tyne:—

Crystal soda, £4 net per ton; Alkali, best white, 2½d. to

Monthly Price Current.

[The prices quoted in the following list are those actually obtained in Mining-lane for articles sold in bulk. Our Retail Subscribers must not expect to purchase at these market prices, but they may draw from them useful conclusions respecting the prices at which articles are offered by the Wholesale Firms.]

CHEMICALS.

	1868. June.		1867. June.	
ACIDS—	s. d.	s. d.	s. d.	s. d.
Acetic per lb.	0 4	0 0	0 4	0 0
Arsenious (see Arsenic)				
Citric per lb.	2 8	2 0	1 11	1 11½
Nitric "	0 5	0 5½	0 5	0 5½
Oxalic "	0 8½	0 8½	0 10	0 10½
Sulphuric "	0 0½	0 1	0 0½	0 1
Tartaric crystal ..	1 3	0 0	1 2½	1 3
powdered ..	1 3½	0 0	1 2	1 2½
ANTIMONY ore..... per ton	230 0	0 0	220 0	0 0
crude .. per cwt	23 0	0 0	22 0	23 0
regulus .. "	43 0	0 0	34 0	0 0
star .. "	42 0	0 0	34 0	35 0
ARSENIC, lump.....	16 0	16 6	16 0	16 6
powder.....	7 6	8 0	7 6	7 9
ASHES (see Salts)				
BRIMSTONE, rough .. per ton	132 0	132 6	132 6	0 0
roll per cwt	10 5	10 10	10 5	10 10
flour.....	14 0	14 10	13 10	0 0
IODINE, dry per oz.	0 9	0 9½	0 9½	0 0
IVORY BLACK, dry .. per cwt.	0 0	0 0	8 0	0 0
MAGNESIA, calcined .. per lb.	1 6	1 3	1 0	1 8
MERCURY..... per bottle	137 0	0 0	137 6	0 0
MINIUM, red per cwt.	21 0	0 0	21 6	22 0
orange ..	32 6	33 6	33 6	0 0
PRECIPITATE, red per lb.	2 6	0 0	2 5	2 0
white ..	2 5	0 0	2 5	0 0
PRUSSIAN BLUE ..	1 0	1 10	1 0	1 10
SALTS—				
Alum per ton	150 0	155 0	150 0	155 0
powder	170 0	175 0	170 0	175 0
Ammonia:				
Carbonate per lb.	0 5	0 5½	0 5	0 5½
Hydrochlorate, crude,				
white..... per ton	420 0	500 0	400 0	500 0
British (see Sal Ammoniac)				
Muriate (see Hydrochlorate)				
Sulphate per ton	230 0	300 0	240 0	250 0
Argol, Cape per cwt	65 0	75 0	65 0	77 6
France ..	48 0	70 0	53 0	75 0
Oporto, red ..	25 0	23 0	30 0	0 0
Stoilly ..	50 0	55 0	60 0	65 0
Naples, white ..	60 0	70 0	66 0	71 0
Florence, white ..	75 0	80 0	80 0	85 0
" red ..	65 0	70 0	70 0	75 0
Bologna, white ..	78 0	80 0	80 0	82 0
Ashes (see Potash and Soda)				
Bleaching powd .. per cwt.	12 6	0 0	14 6	15 0
Borax, crude	30 0	45 0	52 6	62 0
(Thinal) ..	30 0	50 0	47 6	60 0
British refined ..	50 0	55 0	70 0	0 0
Calomel per lb.	2 5	0 0	2 5	0 0
Copper:				
Sulphate per cwt.	24 0	25 0	25 0	26 0
Copperas, green .. per ton	55 0	60 0	55 0	57 6
Corrosive Sublimate .. p. lb.	1 11	0 0	1 11	0 0
Cr. Tartar, French, p. cwt.	84 0	85 0	84 0	0 0
Veutian grey ..	65 0	70 0	75 6	0 0
brown ..	55 0	60 0	70 0	72 6
Epsom Salts per cwt.	3 6	8 6	8 6	9 0
Glauber Salts	5 6	6 0	5 6	6 0
Lime:				
Acetate, white, per cwt.	13 0	21 6	10 0	18 0
Magnesia:				
Carbonate.....	42 6	0 0	42 6	45 0
Potash:				
Bichromate per lb.	0 5	0 0	0 5	0 5½
Carbonate:				
Potashes, Canada, 1st				
sort per cwt.	82 6	33 6	34 6	0 0
Pearlashes, Canada, 1st				
sort per cwt.	35 0	0 0	45 6	0 0
Chlorate per lb.	1 2	0 0	1 0½	0 0
Hydriodate (see Potassium, Iodide)				
Muriate (see Potassium, Chloride)				
Prussiate per lb.	1 0	1 0½	1 0½	1 0
red ..	1 9½	1 10	1 9½	1 10
Tartrate (see Argol and Cream of Tartar)				
Potassium:				
Chloride per cwt.	8 3	8 6	8 0	8 6
Iodide..... per lb.	11 6	12 0	12 0	0 0
Quinine:				
Sulphate, British, in				
bottles per oz.	4 9	0 0	4 9	0 0
Sulphate, French ..	4 3	4 4	4 4	0 0
Sal Acetos per lb.	0 10½	0 0	1 0	0 0
Sal Ammoniac, Brit. cwt.	82 0	33 0	32 6	35 0
Saltpetre:				
Bengal, 6 per cent. or				
under per cwt.	19 6	19 9	18 3	18 9
Bengal, over 6 per cent.				
per cwt.	19 0	19 3	17 6	18 0
Madras.....	13 0	19 0	16 6	17 6

	1868.		1867.	
	s. d.	s. d.	s. d.	s. d.
Saltpetre, continued:—				
Bomb. & Kurachce p. ct.	0 0	0 0	14 6	16 0
European.....	0 0	0 0	20 0	21 6
British, refined ..	23 0	23 6	22 6	23 0
Soda:				
Bicarbonate....	12 6	12 9	10 6	1 9
Carbonate:				
Soda Asb..... per deg.	0 2	0 2½	0 2½	0 2½
Soda Crystals per ton.	02 6	0 0	107 6	110 0
Hyposulphite... per cwt.	22 0	0 0	20 0	0 0
Nitrate.....	13 3	13 9	11 0	13 0
SUOAR OF LEAD, White, cwt.	37 6	38 0	87 0	38 0
Brown ..	27 0	28 0	23 0	29 0
SULPHUR (see Brimstone)				
VERMIGRIS per lb.	0 11	1 0	0 11	1 0
VERMILION, English.. per lb.	2 6	3 0	2 9	3 2
China.....	3 0	0 0	2 5	2 6
DRUGS.				
ALDES, Hepatic.... per cwt.	80 0	180 0	80 0	180 0
Sootrine ..	180 0	340 0	180 0	300 0
Capo, good..	30 0	31 0	30 0	34 0
Inferior ..	13 0	29 0	17 0	29 0
Barbadoos ..	75 0	210 0	80 0	280 0
AMBERGRIS, grey per oz.	32 0	36 0	38 0	40 0
BALSAMS—				
Canada per lb.	1 5	0 0	1 2	1 3
Capivi ..	1 8½	1 9	1 10½	1 11
Pern ..	9 3	0 0	6 3	0 0
Tolu ..	2 5	2 6	2 3	3 0
BARKS—				
Canella alba per cwt.	30 0	33 0	32 0	33 0
Cascarilla.....	23 0	33 0	10 0	28 0
Peru, crown & grey per lb.	0 10	1 10	1 4	2 0
Calisaya, flat ..	2 6	2 8	2 6	2 9
quill ..	2 3	2 8	2 3	2 6
Carthagea ..	0 9	1 3	0 10	1 4
Pitayo ..	0 8	1 3	0 9	1 8
Red ..	1 6	6 0	2 6	12 0
Bucho Leaves ..	0 2½	0 9	0 2½	0 9
CAMPOR, China.. per cwt.	125 0	127 0	137 6	0 0
Japan ..	127 6	0 0	137 6	140 0
Refin Eng. per lb.	1 8½	0 0	1 11	0 0
CANTHARIDES ..	2 2	0 0	2 4	2 5
CHAMOMILE FLOWERS p. cwt.	45 0	80 0	50 0	05 0
CASTOREUM per lb.	5 0	32 0	1 0	20 0
DRAGON'S BLOOD, reed p. ct.	190 0	220 0	200 0	220 0
lump ..	100 0	220 0	90 0	230 0
FRUITS AND SEEDS (see also Seeds and Spices)				
Anise, China Star pr cwt.	84 0	90 0	120 0	0 0
German, &c.	36 0	41 0	30 0	42 0
Beans, Tonquin .. per lb.	1 2	1 6	1 0	1 10
Cardamoms, Malabar				
good ..	7 6	8 0	6 0	6 6
inferior ..	5 3	7 0	4 0	5 10
Madras ..	4 9	8 6	3 9	5 9
Ceylon ..	2 6	2 10	2 6	3 0
Corozo Nuts.... per cwt.	12 0	18 0	10 0	16 6
Cassia, Fistula..	20 0	30 0	20 0	32 0
Castor Seeds ..	10 0	12 0	10 0	12 0
Cocculus Indicus ..	80 0	35 6	30 0	35 0
Colocyath, apple.. per lb.	0 6½	0 10	0 7	0 11
Croton Seeds .. per cwt.	70 0	105 0	100 0	125 0
Cubebs ..	40 0	45 0	50 0	52 0
Cummiu ..	21 0	30 0	14 0	18 0
Dividivi ..	11 6	13 6	12 0	13 0
Feugreek.....	11 0	12 0	10 0	0 0
Guinea Grains ..	45 0	46 0	56 0	53 0
Juniper Berries ..	9 0	10 0	8 6	10 0
Myrobalans ..	14 6	19 6	11 0	10 6
Nux Vomica.....	21 0	23 6	12 0	13 0
Tamarinds, East India ..	25 0	31 0	27 0	27 6
West India, new ..	25 0	35 0	21 0	27 0
Vanilla, large per lb.	9 0	14 0	10 0	16 0
inferior ..	3 0	8 0	4 0	9 0
Wormseed .. per cwt.	1 6	0 0	5 6	6 0
GINGER, Preserved, in bond				
(duty 1d. per lb.) per lb.	0 8	0 10	1 0	1 1½
GUMS (see separate list)				
HONEY, Narbonne ..	0 0	0 0	50 0	70 0
Cuba ..	27 0	36 0	26 0	41 0
Jamaica..	26 0	43 0	25 0	55 0
IPECACUANHA ..	6 3	6 6	9 6	0 0
ISINGLASS, Brazil..	2 2	3 9	2 0	3 10
Tongue sort ..	3 0	4 0	3 0	4 2
East India ..	2 0	4 0	1 10	4 2
West India ..	3 5	3 9	3 8	4 0
Russ. long staple ..	9 0	10 0	9 6	10 6
" leaf ..	5 6	8 6	7 0	10 0
" Simovia ..	1 6	2 6	1 9	2 6
JALAP, good ..	4 0	4 6	4 2	5 0
infer. & stomas ..	0 9	3 9	0 9	3 10
LEMON JUICE... per degree	0 0½	0 0½	0 0½	0 0½
LIQUORICE, Spanish per cwt.	65 0	70 0	65 0	75 0
Italian ..	50 0	60 0	50 0	70 0
MANNA, slaky	3 6	8 0	3 9	4 3
small..... per lb.	1 6	1 9	1 10	2 0
MUSK..... per oz.	19 0	40 0	19 0	32 0
OILS (see also separate List)				
Almond, expressed per lb.	1 8	0 0	1 10	0 0
Castor, 1st pale	0 0	0 0½	0 6½	0 7½
second ..	0 5	0 5½	0 6½	0 6½
infer. & dark ..	0 0	0 0	0 5½	0 6
Bombay (in casks)	0 4½	0 0	0 5½	0 0
Cod Liver per gall.	4 0	7 0	4 6	5 6
Croton..... per oz.	1 2	1 6	1 2	1 6
Essential Oils:				
Almond per lb.	33 0	0 0	35 0	0 0

1868.				1867.				1868.				1867.			
s. d.				s. d.				s. d.				s. d.			
Essential Oils, continued—															
Anise-seed	per lb.	8 3	to 8 4	12 0	to 12 9	80 0	to 80 0	14 0	to 14 0	240 0	to 240 0	16 0	to 16 0	220 0	to 220 0
Bay	per cwt.	75 0	to 75 0	11 3	to 11 3	19 0	to 19 0	160 0	to 160 0	400 0	to 400 0	30 0	to 30 0	320 0	to 320 0
Bergamot	per lb.	12 6	to 12 6	0 2	to 0 2	0 2	to 0 2	0 0	to 0 0	0 0	to 0 0	0 0	to 0 0	0 0	to 0 0
Cajuput, (in bond)	per lb.	0 1	to 0 2	0 0	to 0 0	0 0	to 0 0	0 0	to 0 0	0 0	to 0 0	0 0	to 0 0	0 0	to 0 0
Caraway	per lb.	5 0	to 5 0	6 0	to 6 0	6 0	to 6 0	6 0	to 6 0	6 0	to 6 0	6 0	to 6 0	6 0	to 6 0
Cassia	per lb.	5 6	to 5 9	5 9	to 5 9	5 9	to 5 9	5 9	to 5 9	5 9	to 5 9	5 9	to 5 9	5 9	to 5 9
Cinnamon	per oz.	1 0	to 3 3	3 3	to 3 3	3 3	to 3 3	3 3	to 3 3	3 3	to 3 3	3 3	to 3 3	3 3	to 3 3
Cinnamon-leaf	per lb.	0 1	to 0 2	0 2	to 0 4	0 4	to 0 4	0 4	to 0 4	0 4	to 0 4	0 4	to 0 4	0 4	to 0 4
Citronelle	per lb.	0 2	to 0 2	0 2	to 0 2	0 2	to 0 2	0 2	to 0 2	0 2	to 0 2	0 2	to 0 2	0 2	to 0 2
Citronelle	fine	0 3	to 0 4	0 4	to 0 4	0 4	to 0 4	0 4	to 0 4	0 4	to 0 4	0 4	to 0 4	0 4	to 0 4
Clove	per lb.	2 6	to 2 6	0 0	to 2 7	2 7	to 2 7	0 0	to 0 0	0 0	to 0 0	0 0	to 0 0	0 0	to 0 0
Juniper	per lb.	1 9	to 1 9	2 0	to 1 6	1 6	to 1 9	1 9	to 1 9	1 9	to 1 9	1 9	to 1 9	1 9	to 1 9
Lavender	per lb.	2 0	to 3 9	3 9	to 2 9	2 9	to 3 9	3 9	to 3 9	3 9	to 3 9	3 9	to 3 9	3 9	to 3 9
Leimon	per lb.	4 0	to 8 0	8 0	to 5 0	5 0	to 8 0	9 6	to 9 6	9 6	to 9 6	9 6	to 9 6	9 6	to 9 6
Leimongrass	per oz.	0 4	to 0 4	0 4	to 0 6	0 6	to 0 6	0 0	to 0 0	0 0	to 0 0	0 0	to 0 0	0 0	to 0 0
Neroli	per lb.	0 0	to 0 8	0 8	to 3 6	3 6	to 3 6	4 6	to 4 6	4 6	to 4 6	4 6	to 4 6	4 6	to 4 6
Nutmeg	per lb.	0 3	to 0 3	0 8	to 0 1	0 1	to 0 7	0 7	to 0 7	0 7	to 0 7	0 7	to 0 7	0 7	to 0 7
Orange	per lb.	5 0	to 7 0	7 0	to 5 0	5 0	to 7 0	7 6	to 7 6	7 6	to 7 6	7 6	to 7 6	7 6	to 7 6
Otto of Rose	per oz.	10 0	to 20 0	20 0	to 17 0	17 0	to 21 0	21 0	to 21 0	21 0	to 21 0	21 0	to 21 0	21 0	to 21 0
Peppermint:															
American	per lb.	21 6	to 23 0	23 0	to 22 6	22 6	to 23 0	23 0	to 23 0	23 0	to 23 0	23 0	to 23 0	23 0	to 23 0
English	per lb.	36 0	to 43 0	43 0	to 38 0	38 0	to 44 0	44 0	to 44 0	44 0	to 44 0	44 0	to 44 0	44 0	to 44 0
Rosemary	per lb.	1 0	to 2 0	2 0	to 1 0	1 0	to 2 0	2 0	to 2 0	2 0	to 2 0	2 0	to 2 0	2 0	to 2 0
Sassafras	per lb.	3 0	to 4 0	4 0	to 3 0	3 0	to 3 6	3 6	to 3 6	3 6	to 3 6	3 6	to 3 6	3 6	to 3 6
Spermint	per lb.	10 0	to 20 0	20 0	to 16 0	16 0	to 25 0	25 0	to 25 0	25 0	to 25 0	25 0	to 25 0	25 0	to 25 0
Thymo	per lb.	1 10	to 4 0	4 0	to 2 0	2 0	to 4 0	4 0	to 4 0	4 0	to 4 0	4 0	to 4 0	4 0	to 4 0
Mace, expressed	per oz.	0 0	to 0 2	0 2	to 0 0	0 0	to 0 7	0 7	to 0 7	0 7	to 0 7	0 7	to 0 7	0 7	to 0 7
Opium, Turkey	per lb.	10 0	to 20 6	20 6	to 16 0	16 0	to 17 6	17 6	to 17 6	17 6	to 17 6	17 6	to 17 6	17 6	to 17 6
Egyptian	per lb.	0 0	to 0 0	0 0	to 3 6	3 6	to 7 0	7 0	to 7 0	7 0	to 7 0	7 0	to 7 0	7 0	to 7 0
Quassia (bitter wood)	per ton	165 0	to 0 0	0 0	to 110 0	110 0	to 120 0	120 0	to 120 0	120 0	to 120 0	120 0	to 120 0	120 0	to 120 0
Ruhab, China, good and fine	per lb.	5 0	to 8 0	8 0	to 6 0	6 0	to 10 0	10 0	to 10 0	10 0	to 10 0	10 0	to 10 0	10 0	to 10 0
Good, mid. to ord.	per lb.	1 6	to 4 6	4 6	to 1 9	1 9	to 5 6	5 6	to 5 6	5 6	to 5 6	5 6	to 5 6	5 6	to 5 6
Dutch trimmed	per lb.	10 0	to 12 0	12 0	to 10 0	10 0	to 12 0	12 0	to 12 0	12 0	to 12 0	12 0	to 12 0	12 0	to 12 0
Russian	per lb.	9 0	to 10 0	10 0	to 9 0	9 0	to 10 0	10 0	to 10 0	10 0	to 10 0	10 0	to 10 0	10 0	to 10 0
ROOTS—															
Alumina	per cwt.	20 0	to 35 0	35 0	to 35 0	35 0	to 40 0	40 0	to 40 0	40 0	to 40 0	40 0	to 40 0	40 0	to 40 0
China	per cwt.	30 0	to 35 0	35 0	to 20 0	20 0	to 30 0	30 0	to 30 0	30 0	to 30 0	30 0	to 30 0	30 0	to 30 0
Galangal	per cwt.	16 0	to 19 0	19 0	to 13 0	13 0	to 14 0	14 0	to 14 0	14 0	to 14 0	14 0	to 14 0	14 0	to 14 0
Gentian	per cwt.	10 0	to 17 0	17 0	to 16 0	16 0	to 0 0	0 0	to 0 0	0 0	to 0 0	0 0	to 0 0	0 0	to 0 0
Helleboro	per cwt.	22 0	to 30 0	30 0	to 26 0	26 0	to 32 0	32 0	to 32 0	32 0	to 32 0	32 0	to 32 0	32 0	to 32 0
Oris	per cwt.	36 0	to 42 0	42 0	to 34 0	34 0	to 35 0	35 0	to 35 0	35 0	to 35 0	35 0	to 35 0	35 0	to 35 0
Pellitory	per cwt.	53 0	to 00 0	00 0	to 58 0	58 0	to 60 0	60 0	to 60 0	60 0	to 60 0	60 0	to 60 0	60 0	to 60 0
Pink	per lb.	0 8	to 0 10	0 10	to 10 0	10 0	to 11 9	11 9	to 11 9	11 9	to 11 9	11 9	to 11 9	11 9	to 11 9
Rhatany	per lb.	0 6	to 0 10	0 10	to 0 7	0 7	to 1 0	1 0	to 1 0	1 0	to 1 0	1 0	to 1 0	1 0	to 1 0
Sonoka	per lb.	1 7	to 0 0	0 0	to 1 9	1 9	to 1 10	1 10	to 1 10	1 10	to 1 10	1 10	to 1 10	1 10	to 1 10
Snake	per lb.	1 9	to 0 0	0 0	to 3 3	3 3	to 0 0	0 0	to 0 0	0 0	to 0 0	0 0	to 0 0	0 0	to 0 0
Saffron, Spanish	per lb.	30 0	to 35 0	35 0	to 34 0	34 0	to 36 0	36 0	to 36 0	36 0	to 36 0	36 0	to 36 0	36 0	to 36 0
Salep	per cwt.	90 0	to 110 0	110 0	to 110 0	110 0	to 120 0	120 0	to 120 0	120 0	to 120 0	120 0	to 120 0	120 0	to 120 0
Sarsaparilla, Lima per lb.	per lb.	0 0	to 0 0	0 0	to 1 0	1 0	to 1 4	1 4	to 1 4	1 4	to 1 4	1 4	to 1 4	1 4	to 1 4
Parl	per lb.	0 0	to 0 0	0 0	to 0 11	0 11	to 1 1	1 1	to 1 1	1 1	to 1 1	1 1	to 1 1	1 1	to 1 1
Honduras	per lb.	0 10	to 1 4	1 4	to 0 10	0 10	to 1 4	1 4	to 1 4	1 4	to 1 4	1 4	to 1 4	1 4	to 1 4
Jamaica	per lb.	1 0	to 2 0	2 0	to 1 0	1 0	to 2 1	2 1	to 2 1	2 1	to 2 1	2 1	to 2 1	2 1	to 2 1
Sassafras	per cwt.	10 0	to 0 0	0 0	to 8 0	8 0	to 9 0	9 0	to 9 0	9 0	to 9 0	9 0	to 9 0	9 0	to 9 0
Scammony, Virgin	per lb.	23 0	to 36 0	36 0	to 30 0	30 0	to 40 0	40 0	to 40 0	40 0	to 40 0	40 0	to 40 0	40 0	to 40 0
second & ordinary	per lb.	11 0	to 23 0	23 0	to 12 0	12 0	to 23 0	23 0	to 23 0	23 0	to 23 0	23 0	to 23 0	23 0	to 23 0
Senna, Bombay	per lb.	0 3	to 0 6	0 6	to 0 2	0 2	to 0 4	0 4	to 0 4	0 4	to 0 4	0 4	to 0 4	0 4	to 0 4
Thimble	per lb.	0 2	to 0 10	0 10	to 0 2	0 2	to 0 9	0 9	to 0 9	0 9	to 0 9	0 9	to 0 9	0 9	to 0 9
Alexandria	per lb.	0 5	to 0 11	0 11	to 0 5	0 5	to 0 10	0 10	to 0 10	0 10	to 0 10	0 10	to 0 10	0 10	to 0 10
Spermace, refined	per lb.	1 6	to 0 0	0 0	to 1 2	1 2	to 0 0	0 0	to 0 0	0 0	to 0 0	0 0	to 0 0	0 0	to 0 0
American	per lb.	1 5	to 0 0	0 0	to 1 1	1 1	to 0 0	0 0	to 0 0	0 0	to 0 0	0 0	to 0 0	0 0	to 0 0
Squill	per lb.	0 1	to 0 2	0 2	to 0 2	0 2	to 0 3	0 3	to 0 3	0 3	to 0 3	0 3	to 0 3	0 3	to 0 3
GUMS.															
Ammoniac, drop	per cwt.	200 0	to 260 0	260 0	to 190 0	190 0	to 220 0	220 0	to 220 0	220 0	to 220 0	220 0	to 220 0	220 0	to 220 0
lump	per cwt.	120 0	to 160 0	160 0	to 100 0	100 0	to 180 0	180 0	to 180 0	180 0	to 180 0	180 0	to 180 0	180 0	to 180 0
Animi, fine washed	per cwt.	210 0	to 230 0	230 0	to 210 0	210 0	to 220 0	220 0	to 220 0	220 0	to 220 0	220 0	to 220 0	220 0	to 220 0
bold scraped	per cwt.	190 0	to 215 0	215 0	to 150 0	150 0	to 200 0	200 0	to 200 0	200 0	to 200 0	200 0	to 200 0	200 0	to 200 0
sorts	per cwt.	105 0	to 185 0	185 0	to 100 0	100 0	to 147 0	147 0	to 147 0	147 0	to 147 0	147 0	to 147 0	147 0	to 147 0
dark	per cwt.	70 0	to 100 0	100 0	to 72 0	72 0	to 100 0	100 0	to 100 0	100 0	to 100 0	100 0	to 100 0	100 0	to 100 0
Arabic, E. I., fine	per cwt.	80 0	to 85 0	85 0	to 85 0	85 0	to 90 0	90 0	to 90 0	90 0	to 90 0	90 0	to 90 0	90 0	to 90 0
pale pick'd	sort														